

REVISION OF THE FAMILY PHILOSCIIDAE
(CRUSTACEA, ISOPODA, ONISCOIDEA) FROM SOUTH AFRICA

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(With 25 figures and 1 table)

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ABSTRACT

This revision includes a list of 13 species representing 6 genera and the description of one new genus *Barnardoscia*, and 5 new species, *Nahia louwi*, *Natalscia thomsoni*, *N. rotundata*, *N. appletoni*, and *Barnardoscia maculata*. All the previously known genera and species are redefined. Also given are keys to the South African genera and species and a synopsis of all the Afrotropical genera of Philosciidae, as well as the distribution of the South African philosciid fauna and its affinities.

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INTRODUCTION

Taiti & Ferrara (1980) tentatively revised the family Philosciidae from the Afrotropical region, defining all the known genera (though some of them in a provisional way, due to the lack of material) according to modern criteria, and describing or redescribing several species.

Unfortunately neither the South African endemic genera (*Nahia* Buddenlund, 1908, and *Benthanops* Barnard, 1932) nor the species had been examined directly, thus the generic diagnoses and species list were based on the available literature.

S. Taiti was recently given the opportunity of collecting several philosciids during his stay in South Africa on a fellowship provided by the Department of National Education of the Republic of South Africa. Materials preserved in the South African Museum, Cape Town, and Natal Museum, Pietermaritzburg, and some types in the British Museum (Natural History) were also studied or revised.

Abbreviations used throughout the text:

b	distance of the nodulus lateralis from the posterior margin of the pereon segment
b/c	ratio between b and c
BM	British Museum (Natural History)
c	length of the pereon tergite
d	distance of the nodulus lateralis from the lateral margin of the pereon segment
d/c	ratio between d and c
juv.	juvenile(s)
MZUF	Museo Zoologico dell'Università, Florence
NM	Natal Museum, Pietermaritzburg
NRS	Naturhistoriska Riksmuseet, Stockholm
ovig.	ovigerous
SAM	South African Museum, Cape Town.

KEY TO THE SOUTH AFRICAN GENERA OF PHILOSCIIDAE

1. Frontal line present (Fig. 1C) *Aphiloscia*
- Frontal line missing 2
2. Eye with a single large ommatidium (Fig. 5A) *Benthanops*
- Eye with several ommatidia 3
3. Insertion of uropod exo- and endopodites at the same level (Fig. 6B); d/c co-ordinates of noduli laterales with maxima on pereon segments 2 and 4 (Fig. 6A) *Afrophiloscia*
- Insertion of endopodites more or less proximal to those of exopodites (Figs 8E, 12C, 20D); d/c co-ordinates without a maximum on pereon segment 2 (Figs 8A, 12A, 20A) 4
4. d/c co-ordinates without evident maxima (Fig. 8A) *Nahia*
- d/c co-ordinates with maxima on pereon segments 1 and 4 (Figs 12A, 20A) 5
5. Two noduli laterales on pereon segment 7; endite of maxilliped without a penicil (Fig. 12B) *Nataloscia*
- Four noduli laterales on pereon segment 7; endite of maxilliped bearing a penicil (Fig. 20B) *Barnardoscia*

Genus *Aphiloscia* Budde-Lund, 1908*Diagnosis*

Sulcus marginalis and gland pores present. Two series of noduli laterales on each side of pereon segments (Fig. 1B). Frontal and supra-antennal lines present (Fig. 1C). Pleon epimera very produced. Molar pencil of mandible consisting of a single unbranched seta; outer branch of maxilla 1 with 4 + 6 (5 cleft) teeth; endite of maxilliped without a penicil (Fig. 2B). Pleopod exopodites with respiratory areas (Fig. 2F, H). Uropod protopodite with a triangular depression on outer margin; insertion of endopodite proximal to that of exopodite (Fig. 2C).

Type species

Philoscia guttulata Gerstaecker, 1873, from Tanzania.

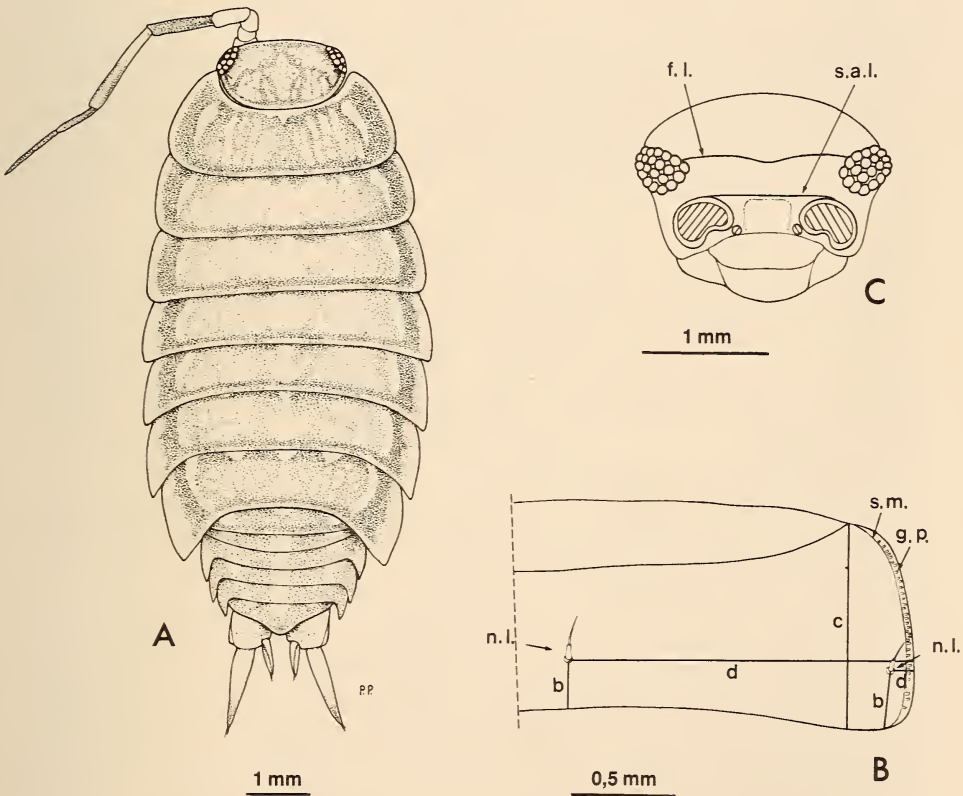


Fig. 1. *Aphiloscia vilis* (Budde-Lund, 1885). A. Adult female. B. Right half of pereon segment 4: b—distance of the nodulus lateralis (n.l.) from the posterior margin of the segment, c—length of the pereon tergite, d—distance of the nodulus lateralis from the lateral margin of the pereon segment, g.p.—gland pore, s.m.—sulcus marginalis. C. Frontal view of cephalon: f.l.—frontal line, s.a.l.—supra-antennal line.

Remarks

Aphiloscia is distinguished by the presence of two series of noduli laterales on each side of pereon segments, a frontal line, very produced pleon epimera, and respiratory areas in the pleopod exopodites.

Besides *A. guttulata* and *A. vilis*, the genus includes the following species: *A. annulicornis* (Budde-Lund, 1885) widely distributed throughout Madagascar and surrounding islands; *A. maculicornis* (Budde-Lund, 1898) from Uganda, Tanzania, Zambia; *A. sordida* Arcangeli, 1950, *A. congolensis congolensis* Arcangeli, 1950, *A. congolensis damasi* Arcangeli, 1950, all from Zaïre; *A. montana* Taiti & Ferrara, 1980, from Zimbabwe; *A. trifasciata* Taiti & Ferrara, 1980, from Kenya; and *A. digitata* Taiti & Ferrara, 1980, from Tanzania, Malawi, and Mozambique.

Aphiloscia vilis (Budde-Lund, 1885)

Figs 1–2

- Philoscia vilis* Budde-Lund, 1885: 210. Dollfus, 1895*b*: 351. Barnard, 1937: 164. Brian, 1953: 9. *Philoscia (Aphiloscia) vilis*: Budde-Lund, 1908: 292. Barnard, 1932: 239, figs 16g, i, l–n, u, 17a, 18d, 19c. Barnard, 1960*a*: 47. Appleton, 1974: 51. Lawrence, 1977: 175. *Aphiloscia vilis*: Stebbing, 1910: 443. Arcangeli, 1950: 66. ?Barnard, 1956: 436. Barnard, 1960*b*: 505, 508. Ferrara & Taiti, 1979: 112. Taiti & Ferrara, 1980: 58. *Philoscia dilectum* Collinge, 1917: 579, pl. 42 (figs 21–31). Collinge, 1920: 478. Collinge, 1945: 345. Brian, 1953: 9.

Material

Barnard Collection. Transvaal: 5 ♀♀, Louis Trichardt, Hanglip forest, 4 500 ft alt., leg. R. F. Lawrence, February 1960, NM–6493; 4 ♀♀, Louis Trichardt, Hanglip forest, 3 000 ft alt., leg. R. F. Lawrence, February 1960, NM–6497; 1 ♂, 3 ♀♀, Entabeni forest, Louis Trichardt, leg. R. F. Lawrence, February 1960, NM–6501; 2 ♀♀, Barberton, leg. R. F. Lawrence, March 1960, NM–6518; 1 ♂, 1 ♀, 6 juv., Louis Trichardt, Hanglip, leg. R. F. Lawrence, February 1960, NM–6519.

New material. Transvaal: 1 ♀, Gladdespruit, near Nelspruit, leg. C. C. Appleton, 18 July 1969, No. 2L, SAM–A16843; 4 ♂♂, 16 ♀♀, same data, October 1969–October 1971, No. 165G–H, SAM–A16844; 2 ♀♀, same data, No. 169S, SAM–A16845; 1 ♀, same data, No. 129H, SAM–A16846; 1 ♂, 4 ♀♀, same data, No. 177Q, SAM–A13162; 1 ♀, same data, No. 165Z, SAM–A16847. Natal: 16 ♂♂, 26 ♀♀, Pietermaritzburg, leg. S. Taiti, 19 April 1980, MZUF–995; 3 ♂♂ Gillits, leg. S. Taiti and K. C. Thomson, 26 April 1980, MZUF–996; 3 ♀♀, Durban, leg. G. Cosnett, 28 March 1980, MZUF–997; 34 ♂♂, 32 ♀♀, Umdloti, leg. S. Taiti and K. C. Thomson, 26 April 1980, MZUF–998. Zululand: 3 ♂♂, 12 ♀♀, near Lake Sibaya Research Station, coastal dune forest, leg. C. C. Appleton, date ?, No. 18L, SAM–A16848; 1 ♂, 4 ♀♀, same data, 10 October 1973, No. 76E, SAM–A16849; 4 ♂♂, 2 ♀♀, same data, 18 December 1973, No. 13E, SAM–A16850; 6 ♂♂, 4 ♀♀, same data, 29 July 1973, No. 49L, SAM–A16851;

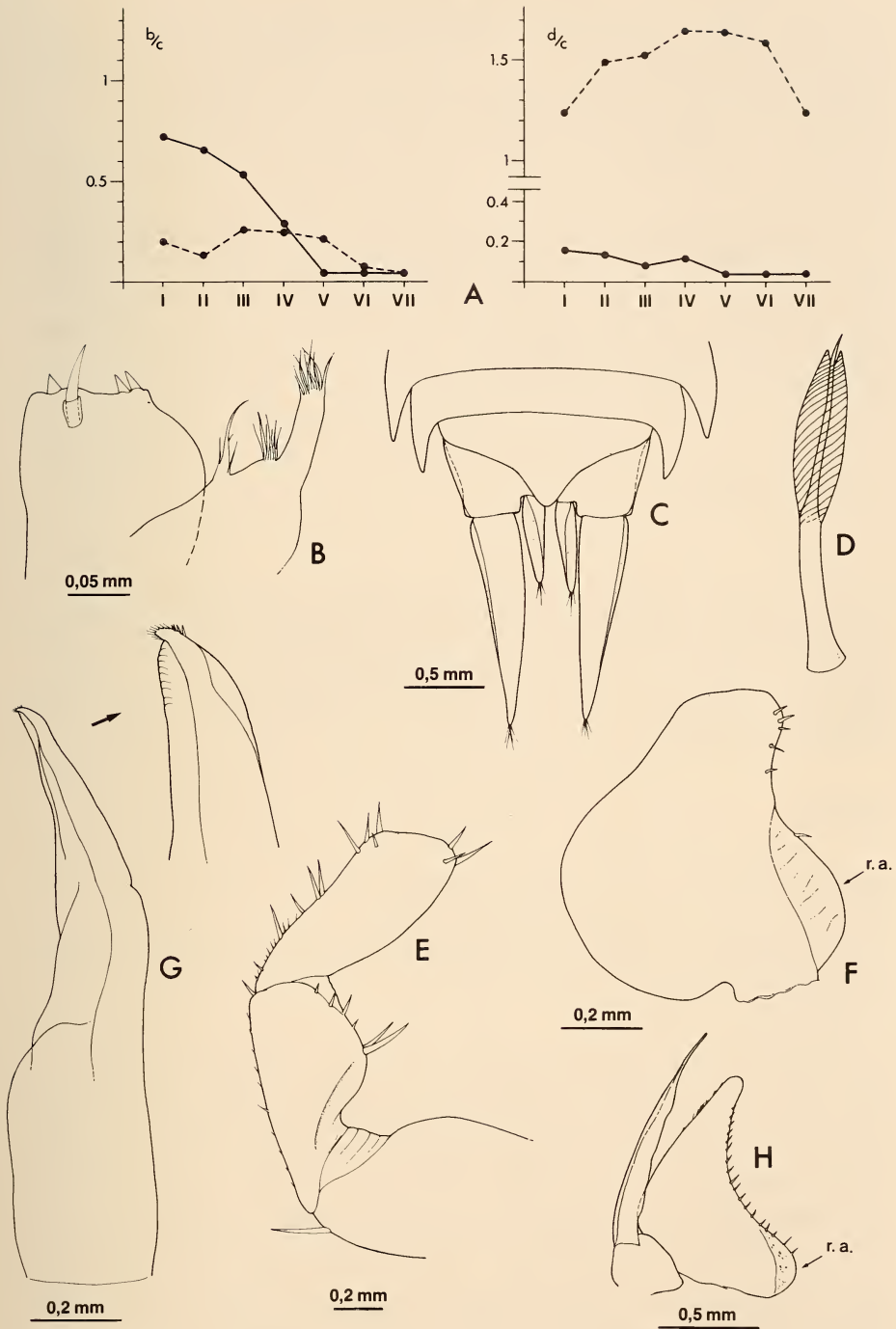


Fig. 2. *Aphiloscia vilis* (Budde-Lund, 1885). A. b/c and d/c co-ordinates. B. Apex of maxilliped. C. Telson and uropods. D. Spine of pereopod 1 carpus (δ). E. Pereopod 7 ischium and merus (δ). F. Pleopod 1 exopodite (δ): r.a.—respiratory area. G. Pleopod 1 endopodite (δ). H. Pleopod 2 (δ).

1 ♂, 2 ♀♀, same data, date?, No. 18D, SAM-A16852; 2 ♂♂, Lake Sibaya Research Station grounds, leg. C. C. Appleton, 18 September 1973, No. 63C, SAM-A16853; 2 ♀♀, Lake Sibaya Research Station, garden, leg. C. C. Appleton, 7 January 1973, No. 8L, SAM-A16854.

Description

9 mm long (according to Barnard, $11 \times 4,5$ mm). Colour extremely variable, usually plumbeous with lighter mottling; pale spot at the base of pereon epimera; epimera dark with external margin orange; joints 1–3 and basal half of joint 5 of antenna orange; basis of pereopods with a dark spot; uropods orange. Eye with twenty-five to thirty ommatidia. Each pereon segment with numerous gland pores (about thirty) per side, arranged along the whole sulcus marginalis. Noduli laterales with b/c and d/c co-ordinates as in Figure 2A. Telson (Fig. 2C) with concave sides, dorsally impressed, narrowly rounded apex. Antenna: ratio of flagellum joints 4 : 3 : 3.

Male

Pereopods 1–4 merus and carpus with brushes of trifold spines (Fig. 2D). Pereopod 7 ischium with a narrow and shallow depression on the rostral surface (Fig. 2E). Pleopod 1 exopodite with subquadrate posterior lobe (Fig. 2F); endopodite with apex slightly bent outward and equipped with fine setae (Fig. 2G). Pleopod 2 as in Figure 2H.

Remarks

A. vilis is very close to *A. montana* Taiti & Ferrara, 1980, from Mt. Selinda (Zimbabwe). It is distinguished in the male (cf. Taiti & Ferrara 1980, figs 7–11) by the less enlarged pereopod 7 ischium which is not excavated at the base; the shorter posterior lobe of pleopod 1 exopodite; the presence of setae on pleopod 1 endopodite apex; the pleopod 2 endopodite that is only slightly longer than exopodite.

The exact locality of the type material is unknown. Budde-Lund (1885: 210) quotes 'Caput Bonae Spei' but, as pointed out by Barnard (1932: 240) the specimen was collected by the botanist Drege, who travelled both in the Cape and in Natal. Most probably the record refers to the latter region, where *A. vilis* is widely distributed. It is definitely not found in the Cape Peninsula.

This species occurs throughout southern Mozambique, Zimbabwe, eastern Transvaal, Zululand, and Natal, and is also known in East London (Cape Province) and Mafa (Ovamboland). In our opinion the latter record needs further confirmation as this is the only occasion that *A. vilis* has been found outside south-eastern Africa.

Genus *Benthanops* Barnard, 1932*Diagnosis*

A few gland pores are present on the anterior part of the pereon segments. One series of noduli laterales on each side of pereon segments 1–6; two noduli laterales on each side of pereon segment 7; d/c co-ordinates with a maximum on segment 4. Eye with a single large ommatidium. Frontal line absent; supra-antennal line present. Pleon epimera reduced, with very small posterior points visible in dorsal view. Molar penicil of mandible consisting of a tuft of plumose setae each arising separately (Fig. 3B); outer branch of maxilla 1 with 4 + 5 serrate teeth (Fig. 3C); endite of maxilliped without a penicil (Fig. 3D). Pereopods without dactylar seta. Pleopod exopodites without respiratory areas. Uropod protopodite grooved on outer margin; insertion of endo- and exopodite almost at the same level.

Type species

Philoscia (Benthanops) fulva Barnard, 1932, from South Africa.

Remarks

Benthanops is very close to the South American genera *Benthana* Budde-Lund, 1908, *Benthanoscia* Lemos de Castro, 1958a, and *Benthanoides* Lemos de Castro, 1958b, from which it is distinguished by the presence of a single ommatidium and the different shape of the molar penicil of mandible. Even greater affinities exist between this and *Ctenoscia* Verhoeff, 1928, from which *Benthanops* differs in the number and position of the noduli laterales (cf. Fig. 3A, and E) as well as the shape of the molar penicil.

The genus includes only the type-species.

Benthanops fulva Barnard, 1932

Figs 3A–D, 4, 5A

Philoscia (Benthanops) fulva Barnard, 1932: 247, figs 16c, f, r, 18e, 19f, 20. Brian, 1953: 9.

Benthanops fulva: Ferrara & Taiti, 1979: 112. Taiti & Ferrara, 1980: 87.

Material

Barnard Collection. Cape Province: 1 ♀, Caledon, leg. K. H. Barnard, March 1908, SAM–A5894; 1 ♂, 17 ♀♀, Noordhoek forest, leg. K. H. Barnard, 19 January 1928, SAM–A7329; 6 ♀♀, Kalk Bay Mt., leg. K. H. Barnard, January 1929, SAM–A7880; 2 ♂♂, 1 ♀, Noordhoek forest, leg. K. H. Barnard, 16 June 1929, SAM–A7881; 5 ♂♂, 45 ♀♀, Table Mt., leg. K. H. Barnard, September 1919, SAM–A7883; 1 ♀, Kleinmond, leg. K. H. Barnard, 1927, SAM–A7946; 2 ♀♀, Hout Bay, leg. ?, 9 August 1931, SAM–A10364.

New material. Cape Province: many ♂♂ and ♀♀, Cape of Good Hope Nature Reserve, leg. S. Taiti, 10 April 1980, MZUF–999; 34 ♂♂, 35 ♀♀,

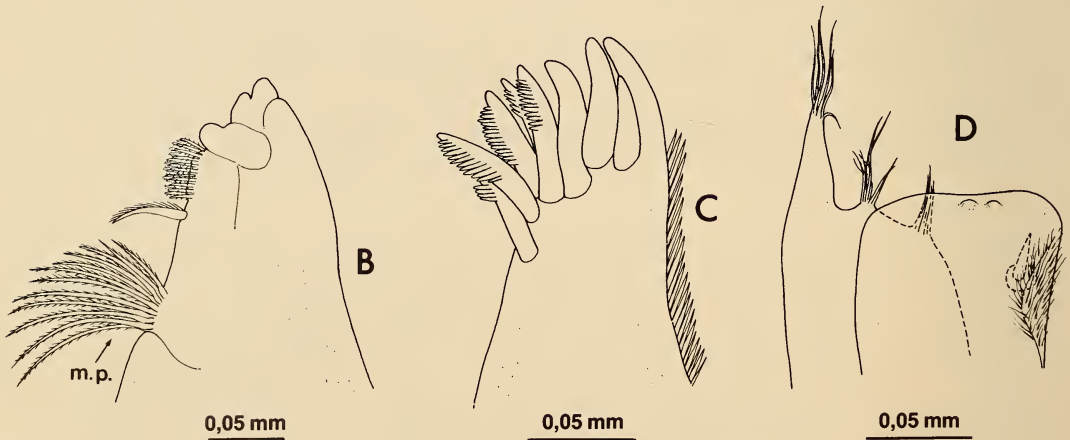
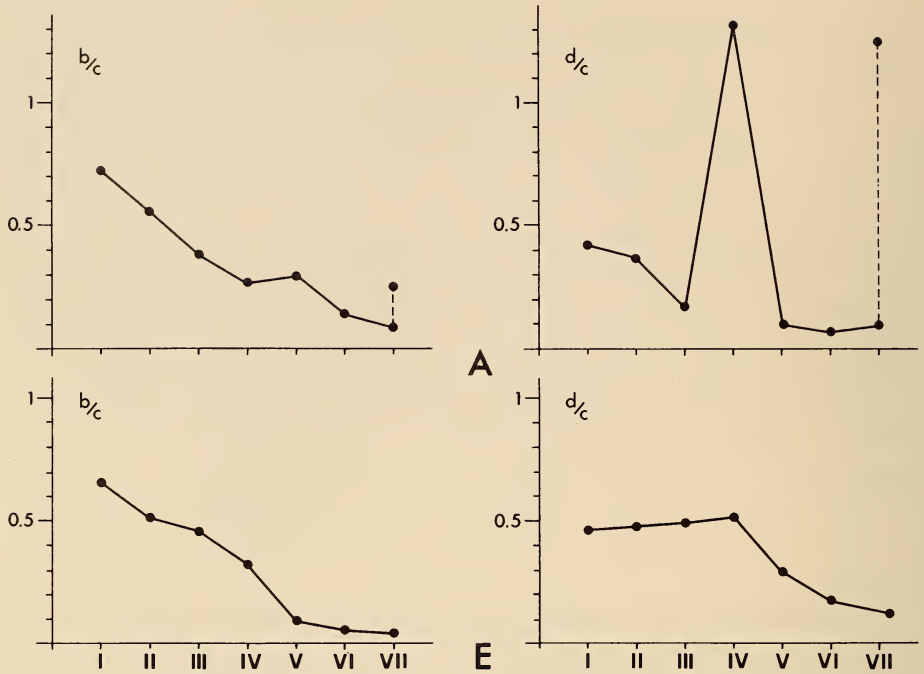


Fig. 3. A-D. *Benthanops fulva* Barnard, 1932. A. b/c and d/c co-ordinates. B. Apex of mandible: m.p.—molar penicil. C. Outer branch of maxilla 1. D. Apex of maxilliped. E. *Ctenoscia minima* (Dollfus, 1892). b/c and d/c co-ordinates.

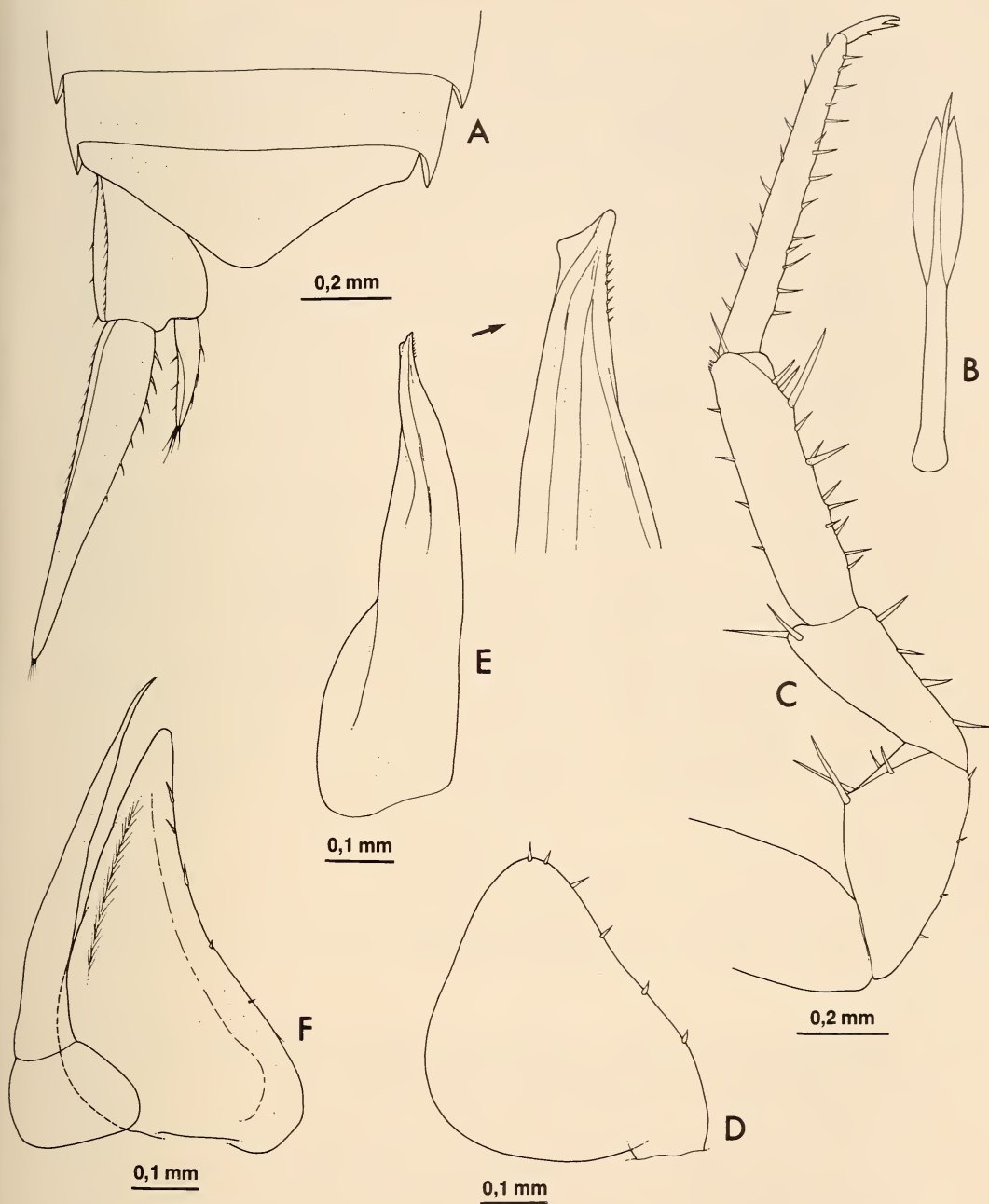


Fig. 4. *Benthanops fulva* Barnard, 1932. Telson and left uropod. B. Spine of pereopod 1 carpus (δ). C. Pereopod 7 (δ). D. Pleopod 1 exopodite (δ). E. Pleopod 1 endopodite (δ). F. Pleopod 2 (δ).

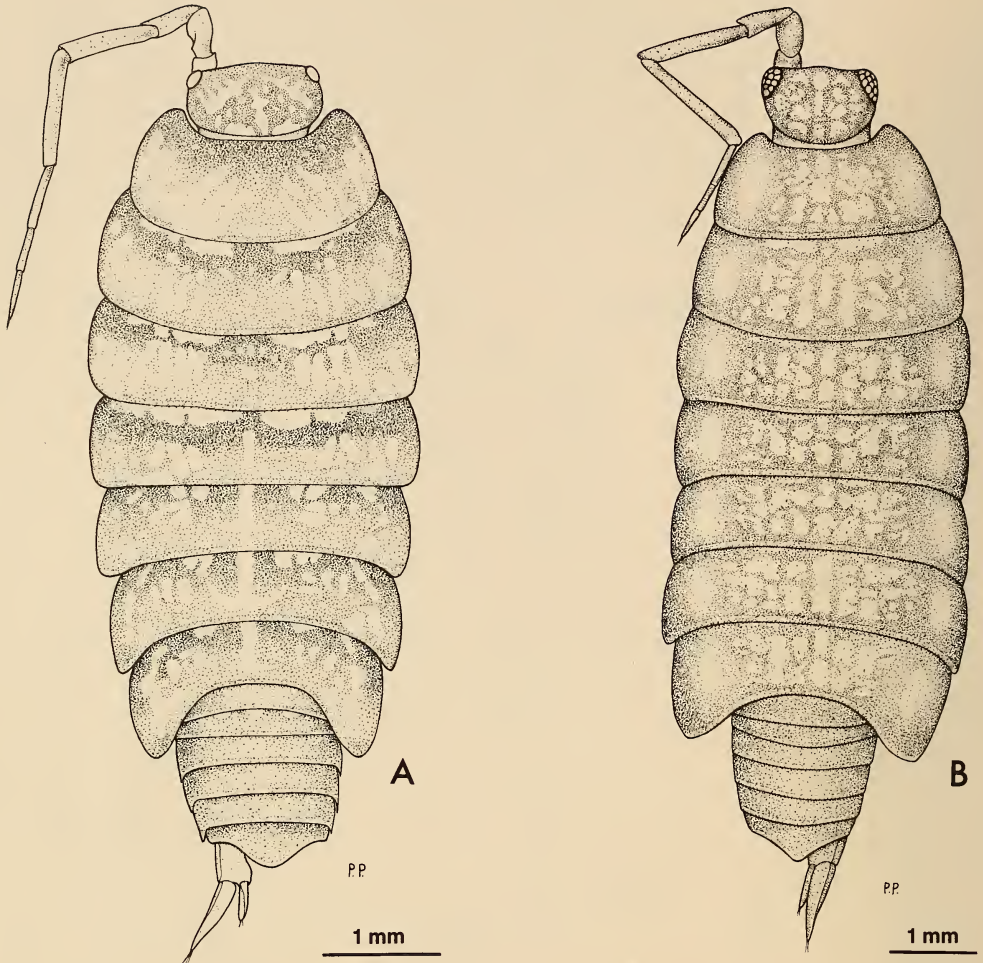


Fig. 5. A. *Benthonops fulva* Barnard, 1932. Adult female. B. *Afrophiloscia ocellata* (Barnard, 1960). Adult female.

Table Mt., Skeleton Gorge, leg. S. Taiti, 13 April 1980, MZUF-1000; 1 ♂, 3 ♀♀, Betty's Bay, leg. J. Hoy, 23 April 1980, MZUF-1001.

Description

♂ 4.5 mm long; ♀ 7 mm long. Yellowish brown, with more or less evident transversal brown stripes at the anterior margins of segments. Noduli laterales with b/c and d/c co-ordinates as in Figure 3A. Telson (Fig. 4A) with feebly concave sides, rounded apex. Antenna: ratio of flagellum joints 5:4:4. Uropod exopodite very long (about three times longer than endopodite).

Male

Pereopod 1–2 merus and carpus with very sparse brushes of spines (Fig. 4B). Pereopod 7 without specializations (Fig. 4C). Pleopod 1 exopodite (Fig. 4D) with outer margin feebly concave, rounded apex; endopodite (Fig. 4E) equipped with some short spines on the medial surface and triangular lobe on the external surface. Pleopod 2 as in Figure 4F.

Remarks

Benthanops fulva differs from all the other South African (and Afrotropical) philosciids by the presence of a single ommatidium.

Barnard (1932: 249) states that this species occurs on mountains but not at low levels. In the Cape Peninsula it is abundant in bushes close to the sea. It is common between Cape Town and Caledon (Cape Province).

Genus *Afrophiloscia* Taiti & Ferrara, 1980*Diagnosis*

Sulcus marginalis and gland pores absent; one series of noduli laterales on each side of pereon segments; d/c co-ordinates with maxima on pereon segments 2 and 4. Frontal line absent; supra-antennal line present. Pleon epimera reduced, adpressed. Molar penicil of mandible consisting of a single unbranched seta; outer branch of maxilla 1 with 4 + 6 (5 cleft) teeth; endite of maxilliped without a penicil. Pleopod exopodites without respiratory areas. Uropod protopodite grooved on outer margin; insertion of endo- and exopodite at the same level.

Type species

Afrophiloscia kinolensis Taiti & Ferrara, 1980, from Tanzania.

Remarks

This genus, recently instituted and discussed (Taiti & Ferrara 1980), differs from the other South African genera of Philosciidae by maxima on pereon segments 2 and 4 of the noduli laterales d/c co-ordinates; the setose apex and typical indentation on the medial margin of the maxilliped endite (see Fig. 6D) and insertion of the uropod exo- and endopodites at the same level.

Afrophiloscia, besides *A. kinolensis* and *A. ocellata*, includes the following species: *A. uncinata* (Ferrara, 1974) and *A. brevicauda* Taiti & Ferrara, 1980, from Tanzania; *A. africana* (Schmoelzer, 1974), *A. rotundata* Taiti & Ferrara, 1980, and *A. kenyensis* Taiti & Ferrara, 1980, all from Kenya.

Afrophiloscia ocellata (Barnard, 1960)

Figs. 5B–6

Philoscia (*Setaphora*) *ocellata* Barnard, 1960a: 48. Lawrence, 1977: 175.
Setaphora ocellata: Ferrara & Taiti, 1979: 119. Taiti & Ferrara, 1980: 83.

Material

Barnard Collection. Transvaal: 2 ♂♂, 3 ♀♀ (types), Magoebaskloof, 4 000 ft alt., leg. R. F. Lawrence, March 1960, NM-6512; 2 ♀♀, Mariepskop, 6 000 ft alt., leg. R. F. Lawrence, March 1960, NM-6504; 1 ♀, 1 juv., Graskop, leg. R. F. Lawrence, March 1960, NM-6508; 3 ♀♀, Malta forest, Selati Estate, leg. R. F. Lawrence, NM-6516.

New material. Transvaal: 1 ♀, Gladdespruit, near Nelspruit, leg. C. C. Appleton, October 1969–October 1971, No. 174T, SAM-A16855.

Description

9,5 mm long (according to Barnard $7 \times 2,5-2,75$ mm). Brown with pale irroration on head and pereon; pleon almost a uniform brown; large oval pale spot at the base of pereon epimera. Eyes with about sixteen ommatidia. Noduli laterales with b/c and d/c co-ordinates as in Figure 6A. Pleon epimera adpressed with very short posterior points, not visible in dorsal view. Telson (Fig. 6B–C) with slightly concave sides, narrowly rounded or subacute apex. Antenna with ratio of flagellum joints 5 : 3 : 3. Endite of maxilliped (Fig. 6D) as in the other species of *Afrophiloscia*.

Male

Pereopods 1–2 are missing in the males observed. Pereopod 7 without any evident specialization (Fig. 6E). Pleopod 1 exopodite (Fig. 6F) with triangular posterior point bent outwards; endopodite (Fig. 6G–H) with an oval lobe equipped with fine setae. Pleopod 2 exopodite much shorter than endopodite (Fig. 6I).

Remarks

Re-examination of the type material showed that these specimens belong to the genus *Afrophiloscia* Taiti & Ferrara, 1980. *A. ocellata* differs from *A. africana* and *A. uncinata* by the lack of specializations (hooks) on pereopod 7 merus ♂; and from those and from all the other species of *Afrophiloscia* by the swollen setose apex of pleopod 1 endopodite ♂. The distinctive coloration is a useful trait in identifying this species.

Afrophiloscia ocellata occurs throughout the eastern Transvaal. Its presence in South Africa considerably enlarges the range of the genus *Afrophiloscia* previously known only in Kenya and Tanzania.

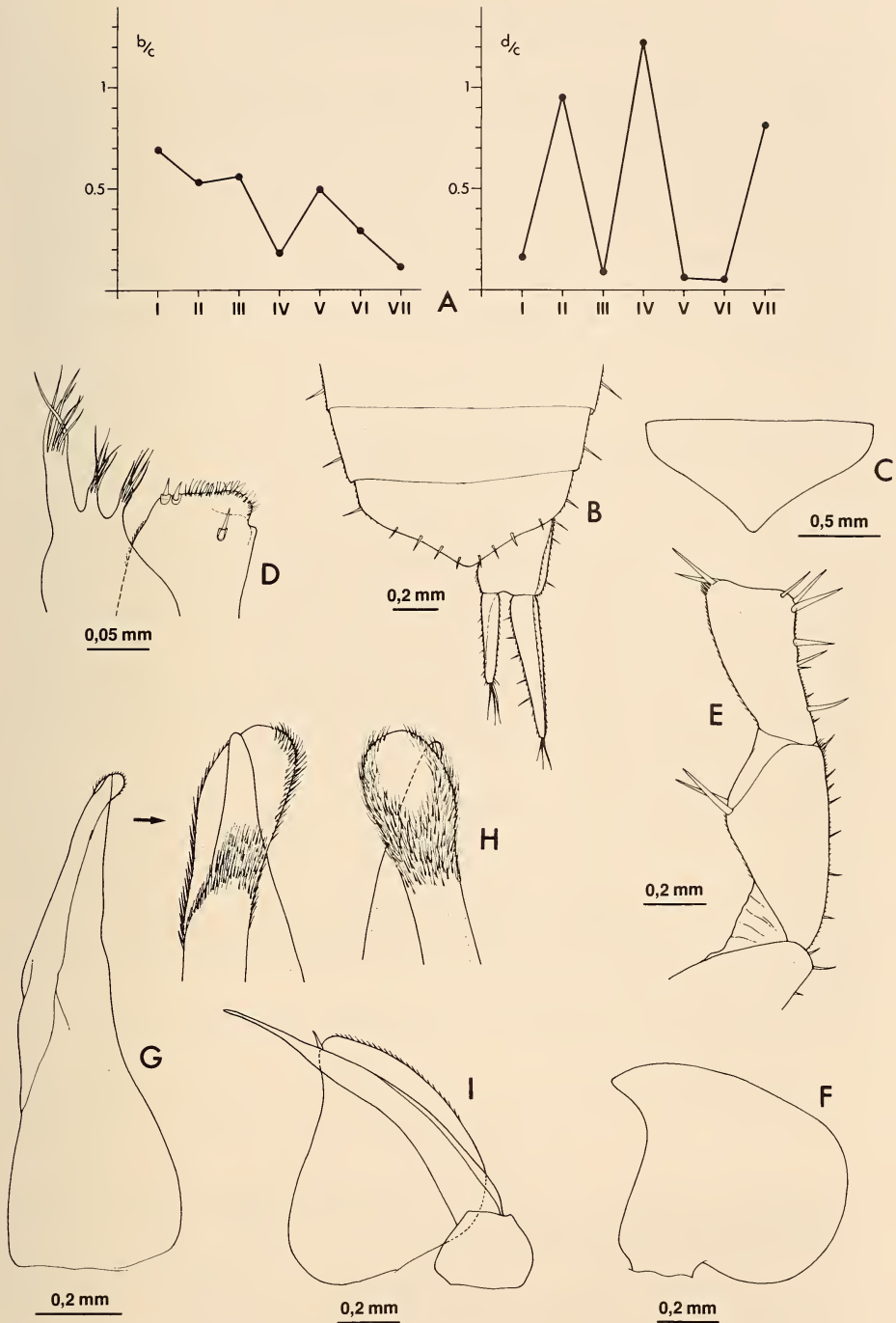


Fig. 6. *Afrophiloscia ocellata* (Barnard, 1960). A. b/c and d/c co-ordinates. B. Telson and right uropod. C. Telson of a female specimen from Graskop. D. Apex of maxilliped. E. Pereopod 7 ischium and merus (δ). F. Pleopod 1 exopodite (δ). G. Pleopod 1 endopodite (δ). H. Apex of pleopod 1 endopodite (δ), ventral view. I. Pleopod 2 (δ).

Genus *Nahia* Budde-Lund, 1908*Diagnosis*

Sulcus marginalis and gland pores present. One series of noduli laterales on each side of pereon segments; their d/c co-ordinates lacking evident maxima (Figs 8A, 10A). Frontal line absent and supra-antennal line present. Pleon epimera reduced. Molar penicil of mandible consisting of a single unbranched seta (Fig. 8B); outer branch of maxilla 1 with 4 + 6 (5 cleft) teeth (Fig. 8C); endite of maxilliped without a penicil (Fig. 8D). Pereopods with a flagellar dactylar seta. Pleopod exopodites without respiratory areas. Uropod protopodite grooved on outer margin; insertion of endopodite slightly proximal to that of exopodite.

Type species

Philoscia hirsuta Budde-Lund, 1906, from South Africa.

Remarks

An incomplete diagnosis of *Nahia* was given by Taiti & Ferrara (1980: 87), based on the diagnoses by Budde-Lund (1906) and Barnard (1932), as well as on the description and figures of *Philoscia warreni* (= *Nahia hirsuta* according to Barnard 1932) by Collinge (1917).

The study of several specimens of *Nahia* (*N. hirsuta* and *N. louwi* n.sp.) resulted in a complete diagnosis of the genus and in the demonstration that—as will be discussed below—*P. warreni* is not a junior synonym of *Nahia hirsuta* as proposed by Barnard (1932).

Nahia differs from all the afrotropical genera in the absence of peaks in the d/c curve. This trait, which places it in the *Plymophiloscia* group, gives it affinity to the genus *Bilawrencia* Vandel, 1973b, from which it differs in the absence of a penicil on the maxilliped and in the simple, rather than dichotomized, molar penicil of the mandible. *Nahia* is also very close to the genus *Australophiloscia* Vandel, 1973a, from which it differs essentially in the position of the noduli laterales.

The genus *Nahia* includes only two species, both from South Africa.

KEY TO THE SPECIES OF *NAHIA*

1. Pereopod 7 ♂: merus with a setose protrusion at the base (Fig. 8H). Pleopod 1 ♂: exopodite with outer margin truncated and distally deeply excised (Fig. 9A); endopodite with spines and a crest-shaped lobe close to the apex (Fig. 9B-C) *N. hirsuta* (Budde-Lund)
- Pereopod 7 ♂: merus without setose protrusion at the base (Fig. 10C). Pleopod 1 ♂: exopodite with outer margin not truncated and not excised (Fig. 10D); endopodite with goblet-shaped apex (Fig. 10E) *N. louwi* sp. nov.

Nahia hirsuta (Budde-Lund, 1906)

Figs 7–9

Philoscia hirsuta Budde-Lund, 1906: 89, pl. 3 (figs 42–52). Barnard, 1937: 164. Barnard, 1949: 403.

Philoscia (Nahia) hirsuta: Budde-Lund, 1908: 290. Budde-Lund, 1909: 64. Barnard, 1932: 245, figs 16j–k, p, v, 18c, 19f, *partim*. Brian, 1953: 9.

Nahia hirsuta: Stebbing, 1910: 442. Ferrara & Taiti, 1979: 115. Taiti & Ferrara, 1980: 88.

Anchiphiloscia karongae: Stebbing, 1922: 6.

Material

Barnard Collection. Cape Province: 12 ♂♂, 34 ♀♀, Zeekoevlei, Cape Flats, leg. K. H. Barnard, 29 October 1929, SAM–A7397; 14 ♂♂, 16 ♀♀, Keurbooms River, leg. K. H. Barnard, January 1931, SAM–A7858; 3 ♂♂, 4 ♀♀, same data, October 1930–January 1931, SAM–A7856; 1 ♂, 9 ♀♀, same data, January 1931, SAM–A7842; 2 ♂♂, 6 ♀♀, Noordhoekvlei, leg. K. H. Barnard, 24 January 1928, SAM–A7332; 1 ♂, 3 ♀♀, Houw Hoek, leg. K. H. Barnard, 1931, SAM–A8021; 2 ♀♀, Doorn River, leg. S. H. Haughton and C. W. Thorne, 1931, SAM–A7957; 8 ♂♂, 14 ♀♀, Forebay, leg. K. H. Barnard, January 1931, SAM–A7869; 3 ♂♂, 3 ♀♀, Wilderness, leg. S. H. Haughton and C. W. Thorne, 1931, SAM–A7950; 2 ♀♀, Knysna, leg. R. F. Lawrence, 1929, SAM–A7390.

New material. Cape Province: 4 ♂♂, 3 ♀♀, Queenstown, leg. V. B. Whitehead, 21 June 1975, SAM–A16856; 1 ♂, Die Bosch, Bredasdorp, leg. B. F. Kensley, 1969, SAM–A16857; 1 ♀, near Calitzdorp, 7 November 1971, SAM–A16858; 27 ♀♀, Zoutpansklipheuwel on Olifants River, 3 January 1975, SAM–A16859; 18 ♂♂, 37 ♀♀, Cape of Good Hope Nature Reserve, leg. S. Taiti, 10 April 1980, MZUF–1002; 8 ♂♂, 41 ♀♀, Rondeberg, 65 km N of Cape Town, leg. S. Taiti, 20 March 1980, MZUF–1003; 1 ♂, Table Mt., Skeleton Gorge, leg. S. Taiti, 13 April 1980, MZUF–1004.

Description

♂ 6.5 mm long; ♀ ovig. 8 mm long. Slate-grey mottled with lighter spots, a narrow white and a wide black stripe at the base of pereon epimera; joints 2–5 of peduncle of antenna with a white ring at the base. Eye with about twenty-two ommatidia. Back equipped with numerous upright setae. Each pereon segment with ten to fifteen gland pores per side arranged along the whole sulcus marginalis. Noduli laterales with b/c and d/c co-ordinates as in Figure 8A. Telson (Fig. 8E–F) short, with straight or slightly concave sides, rounded apex. Antenna: ratio of flagellum joints 4 : 3 : 4.

Male

Pereopods 1–3 merus and carpus with brushes of spines as in Figure 8G. Pereopod 7 ischium with a deep concavity; merus with an evident setose protrusion at the base (Fig. 8H). Pleopod 1 exopodite with outer margin truncated and distally deeply excised (Fig. 9A); endopodite with apex equipped with spines and a crest-shaped lobe (Fig. 9B–C). Pleopod 2 as in Figure 9D.

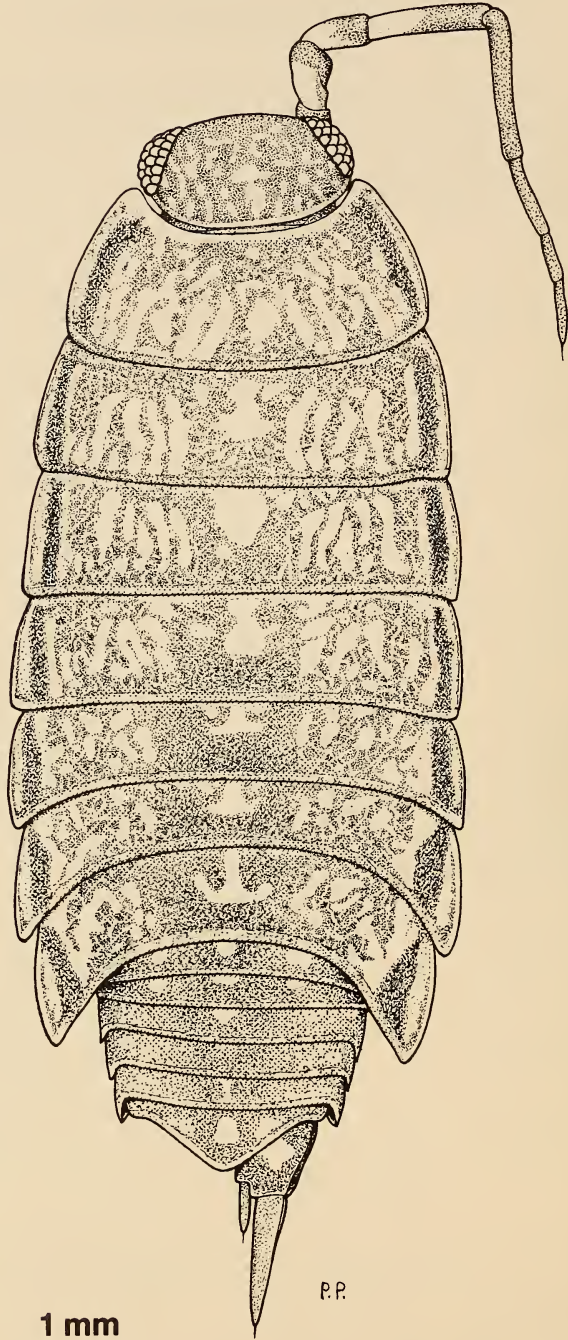


Fig. 7. *Nahia hirsuta* (Budde-Lund, 1906). Adult female.

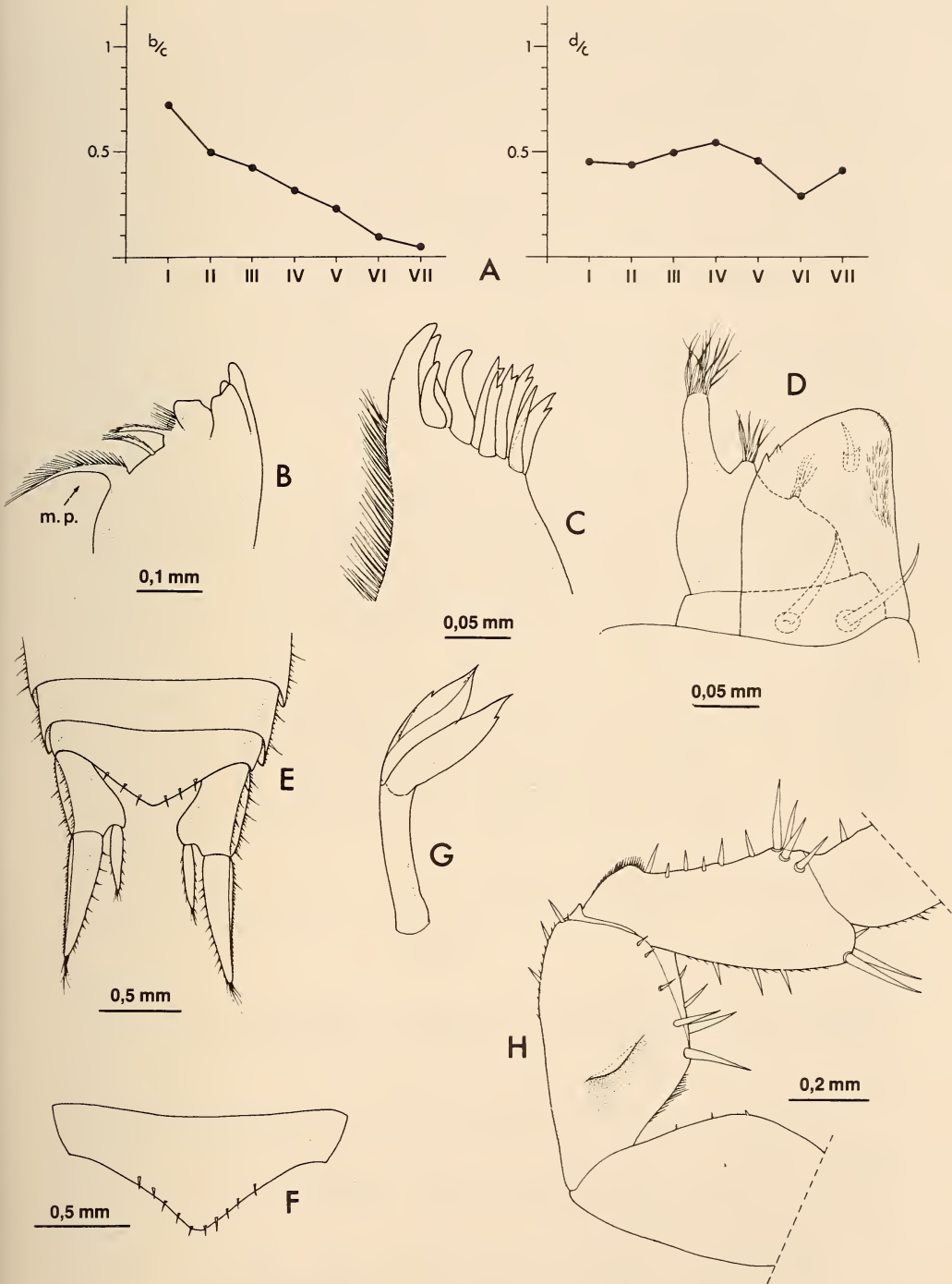


Fig. 8. *Nahia hirsuta* (Budde-Lund, 1906). A. b/c and d/c co-ordinates. B. Apex of mandible: m.p.—molar penicil. C. Outer branch of maxilla 1. D. Apex of maxilliped. E. Telson and uropods. F. Telson of another specimen. G. Spine of pereopod 1 carpus (δ). H. Pereopod 7 ischium and merus (δ).

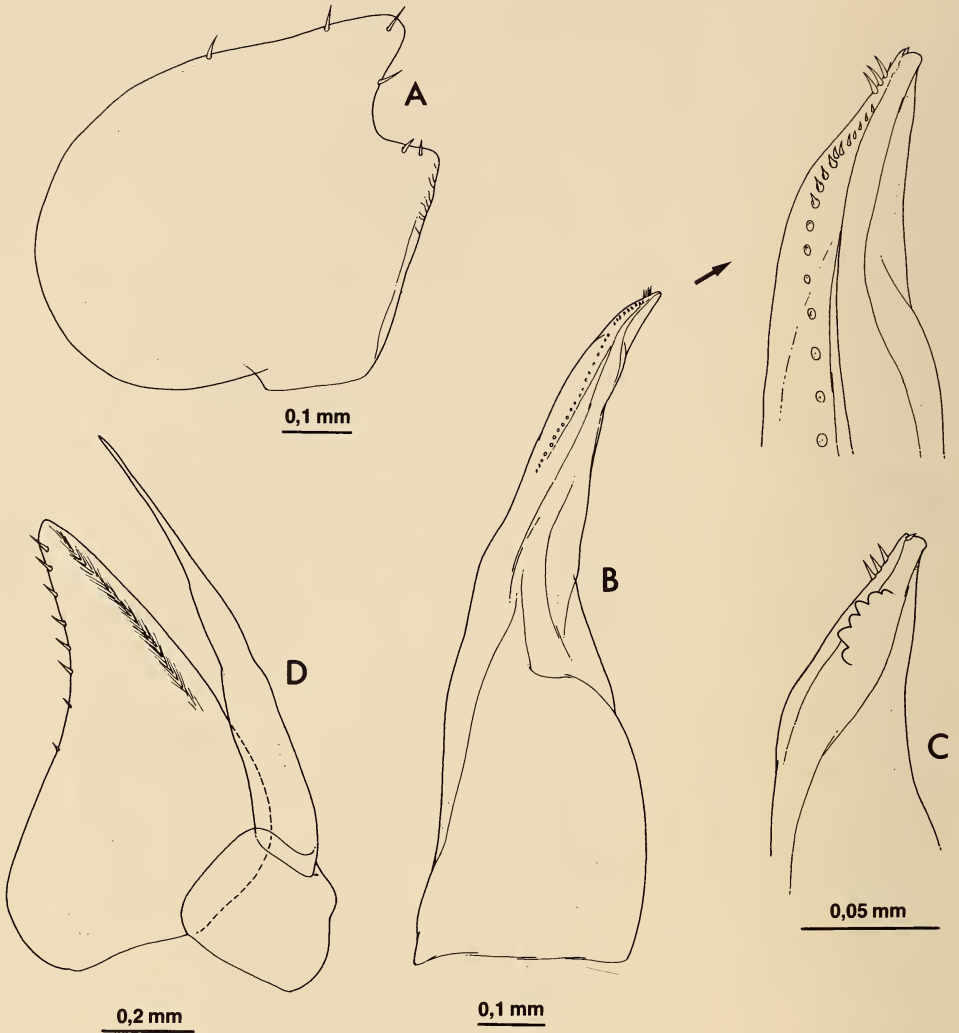


Fig. 9. *Nahia hirsuta* (Budde-Lund, 1906). A. Pleopod 1 exopodite (δ). B. Pleopod 1 endopodite (δ). C. Apex of pleopod 1 endopodite (δ), ventral view. D. Pleopod 2 (δ).

Remarks

A study of part of Barnard's collection showed that he had identified two different species as *Nahia hirsuta*. The specimens from Addo Bush (Barnard 1932: 246) belong, in fact, to a new species of *Nahia* (see below). Consequently only the verified material can be considered as correctly assigned, while all the other records must be considered as *sub judice*.

Furthermore, as *Philoscia warreni* Collinge, 1917, from Natal is not a synonym of *N. hirsuta*, as affirmed by Barnard (1932: 247), all his records from

this region must be considered as doubtful. In our opinion this species occurs only in the southern part of Cape Province.

It is likely that *Chaetophiloscia elongata* from Cape Town (Dollfus 1895b: 350) refers to *N. hirsuta*, as its colour pattern and general body shape are very similar to this species.

Nahia louwi sp. nov.

Fig. 10

Philoscia (Nahia) hirsuta: Barnard, 1932: 245, *partim* (the specimens from Addo Bush).

Material

Barnard Collection. Cape Province: 1 ♂, Addo Bush, leg. J. Drury, July 1919, holotype SAM-A16860; 9 ♂♂, 13 ♀♀, same data, paratypes SAM-A6067.

Description

♂ 7,5 mm long; ♀ 8 mm long. Colour faded by long conservation. Eye with about twenty-two ommatidia. Back with numerous upright setae. Number and disposition of gland pores as in *N. hirsuta*. Noduli laterales with b/c and d/c co-ordinates as in Figure 10A. Telson (Fig. 10B) with concave sides, rounded apex. Antenna: ratio of flagellum joints 5 : 4 : 4.

Male

Pereopods 1-3 merus and carpus with sparse brushes of spines as in *N. hirsuta*. Pereopod 7 ischium very similar to that of the preceding species, merus lacking the setose protuberance (Fig. 10C). Pleopod 1 exopodite with outer margin not excised (Fig. 10D); endopodite with goblet-shaped apex, equipped with many setae (Fig. 10E). Pleopod 2 as in *N. hirsuta*.

Etymology

The species is named for Prof. G. N. Louw, Head of the Department of Zoology of the University of Cape Town.

Remarks

These specimens were identified as *Nahia hirsuta* by Barnard. The new species, even if closely related to *N. hirsuta*, is readily distinguished in the male by the lack of a meral protrusion on pereopod 7, the non-truncated and non-excised outer margin of pleopod 1 exopodite, and goblet-shaped apex of pleopod 1 endopodite.

Genus *Natalscia* Verhoeff, 1942

Diagnosis

Sulcus marginalis and gland pores present; one series of noduli laterales on each side of pereon segments; d/c co-ordinates with a maximum on pereon

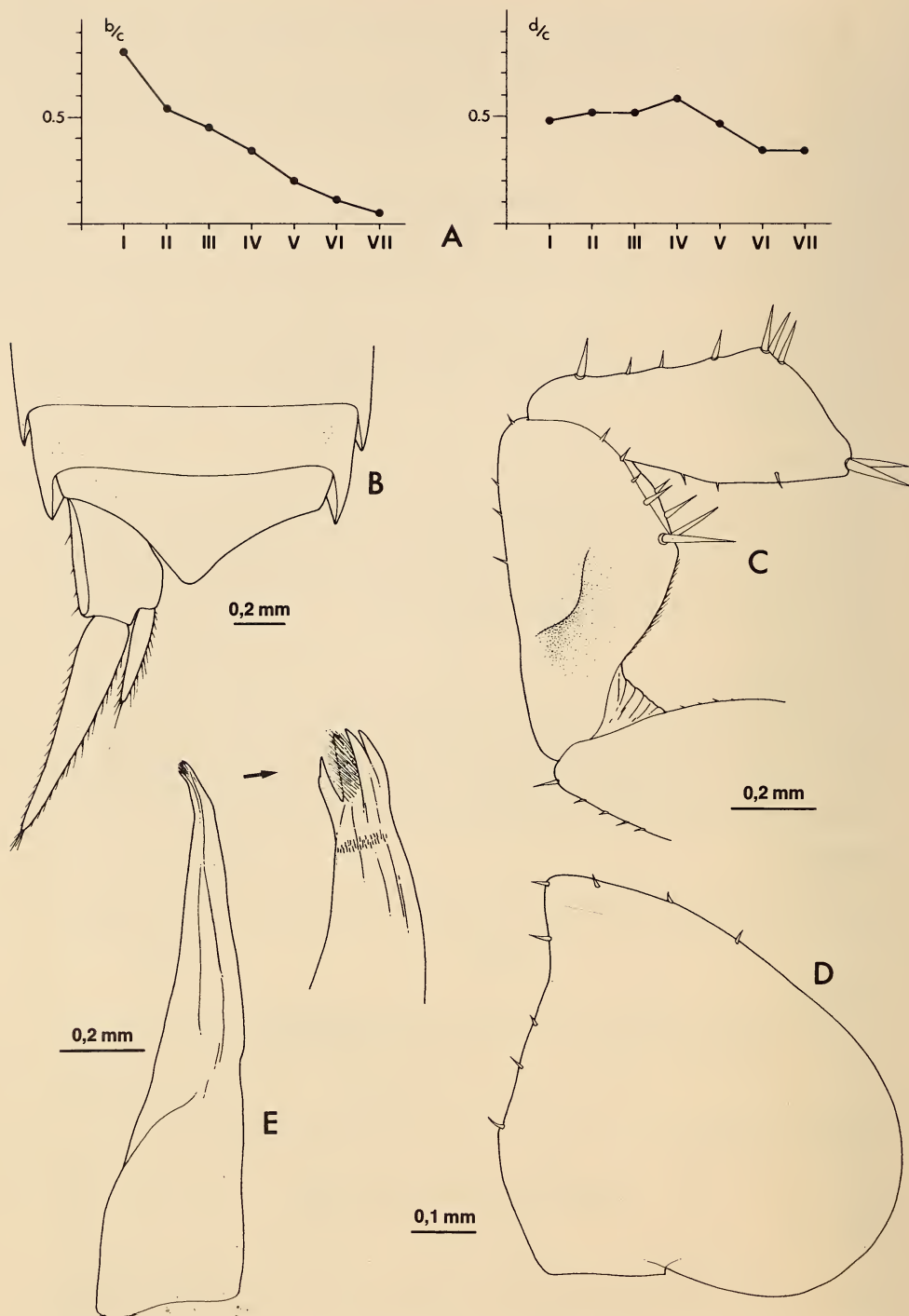


Fig. 10. *Nahia louwi* sp. nov. A. b/c and d/c co-ordinates. B. Telson and left uropod. C. Pereopod 7 ischium and merus (δ). D. Pleopod 1 exopodite (δ). E. Pleopod 1 endopodite (δ).

segment 4 and a lower one on segment 1 (Figs 12A, 14A, 15A, 16A, 17A). Frontal line absent, supra-antennal line present. Pleon epimera reduced, with small posterior points visible in dorsal view. Molar penicil of mandible consisting of a single unbranched seta; outer ramus of maxilla 1 with 4 + 6 (5 cleft) teeth; endite of maxilliped with tiny setae at the apex and without penicil (Fig. 12B). A long flagellar dactylar seta is present. Pleopod exopodites without respiratory areas. Uropod protopodite grooved on outer margin; insertion of endopodite proximal to that of exopodite.

Type species

Philoscia warreni Collinge, 1917 = *Philoscia mina* Budde-Lund, 1885, from South Africa.

Remarks

Natalscia was established by Verhoeff (1942: 64) for *Philoscia warreni* Collinge, 1917. As Barnard (1932: 247) considered this to be a synonym of *Nahia hirsuta* (Budde-Lund, 1906), the genus *Natalscia* also became synonymous with *Nahia*. Instead, a study of Collinge's material showed that *P. warreni* and *N. hirsuta* belong to distinct genera, and thus *Natalscia* is to be considered as a valid genus. However, Verhoeff's diagnosis—based exclusively on Collinge's description and figures (often erroneous)—is incomplete and incorrect in at least two points: the frontal line is absent (present according to Verhoeff), and the outer branch of maxilla 1 has ten instead of eight teeth. Thus it proved necessary to redefine the genus *Natalscia*.

It is very close to the new genus *Barnardoscia* from which it differs by the presence of two, rather than four, noduli laterales on pereon segment 7 and the lack of a penicil on the maxilliped. It differs from *Nahia* in the different position of the noduli laterales (compare Figs 8A and 12A for b/c and d/c co-ordinates), and from *Setaphora* Budde-Lund, 1908, in the position of the noduli laterales (compare Fig. 12A with Fig. 83 in Taiti & Ferrara 1980), the lack of a maxillipedal penicil, and the different level of insertion of the uropod endo- and exopodites.

A comparison of the type material showed that *P. warreni* is a junior synonym of *P. mina* Budde-Lund, 1885.

The genus *Natalscia* includes five species, all from South Africa. A sixth form (*Natalscia* sp.) is known from Transvaal.

KEY TO THE SPECIES OF NATALSCIA

1. Telson semicircular (Fig. 16B) *N. rotundata* sp. nov.
- Telson triangular (Figs 12C, 14B, 15B, 17B) 2
2. Pereopods 1–2 carpus and merus ♂ without brushes of spines *N. mina* (Budde-Lund)
- Pereopods 1–2 carpus and merus ♂ with brushes of spines (Figs 15C, 17C) 3
3. Pleopod 1 ♂: exopodite with an evident triangular protrusion on outer margin (Fig. 15E); endopodite with an elongate hyaline lobe at the apex (Fig. 15G) *N. thomsoni* sp. nov.
- Pleopod 1 ♂: exopodite without triangular protrusion on outer margin (Figs 14E, 17E); endopodite without terminal hyaline lobe 4

4. Pleopod 1 ♂: endopodite with styliform apical part, apex equipped with tiny setae (Fig. 17F) *N. appletoni* sp. nov.
 - Pleopod 1 ♂: endopodite without styliform apical part, apex without setae (Fig. 14F)
N. cingulata (Barnard)

Nataliscia mina (Budde-Lund, 1885)

Figs 11–13

Philoscia mina Budde-Lund, 1885: 219. Dollfus, 1895b: 351. Stebbing, 1910: 443. Barnard, 1937: 164. Barnard, 1949: 402.

Philoscia warreni Collinge, 1917: 578, pl. 42 (figs 10–20). Collinge, 1920: 477, pl. 27 (fig. 6). Collinge, 1945: 346.

Philoscia (Setaphora) mina: Barnard, 1932: 242, figs 18b, 19e. Brian, 1953: 9.

Nataliscia warreni: Verhoeff, 1942: 64.

Philoscia Warreni: Brian, 1953: 9.

Setaphora mina: Ferrara & Taiti, 1979: 119. Taiti & Ferrara, 1980: 83.

nec Philoscia (Setaphora) mina: Barnard, 1960a: 47.

Material

Budde-Lund Collection. 2 ♂♂, 1 ♀, Cape, leg. J. F. Drege, BM–1921: 10: 18: 1899–1901 (syntypes).

Collinge Collection. 3 ♂♂, 9 ♀♀, Umbilo Bush, near Durban, Natal, leg. E. Warren, BM–1919: 4: 26: 469–478 (*P. warreni*; paratypes).

New material. Natal: 4 ♂♂, 1 ♀, Pietermaritzburg, leg. S. Taiti, 19 April 1980, MZUF–1005; 2 ♂♂, Gillits, leg. S. Taiti, 26 April 1980, MZUF–1006; 1 ♂, 2 ♀♀, Umhlanga Rocks, coastal forest, leg. S. Taiti and K. C. Thomson, 26 April 1980, MZUF–1007; 17 ♂♂, 30 ♀♀, mouth of Mdloti River, mangrove forest, leg. S. Taiti and K. C. Thomson, 26 April 1980, MZUF–1008; 25 ♂♂, 34 ♀♀, Umdloti, leg. S. Taiti and K. C. Thomson, 26 April 1980, MZUF–1009.

Transkei: ? 1 ♂, ? 8 ♀♀, Umgazana, near Port St. Johns, leg. B. F. Kensley, 18 August 1974, SAM–A16861.

Description

11 × 4,5 mm long (according to Barnard the maximum dimensions are 13 × 5 mm). Brown colour, more or less suffused with yellowish; a white oval spot at the base of pereon epimera and medial dark spot on the posterior part of pereon segments; pleon with a light stripe in the mid-line (Fig. 11); appendages pigmented. Though the light and dark spots are always visible, very pale specimens (due to isolated chromatophores) are rather common. Eye with about twenty-two ommatidia. Each pereon segment with ten to twenty gland pores per side. Noduli laterales with b/c and d/c co-ordinates as in Figure 12A. Telson (Fig. 12C) with subacute apex. Antenna: ratio of flagellum joints 5 : 3 : 3. Pereopod with a flagellar dactylar seta (Fig. 12D).

Male

Anterior pereopods without brushes of spines. Pereopod 7 ischium with a strong spine on sternal margin (Fig. 12E). Pleopod 1 exopodite with a long

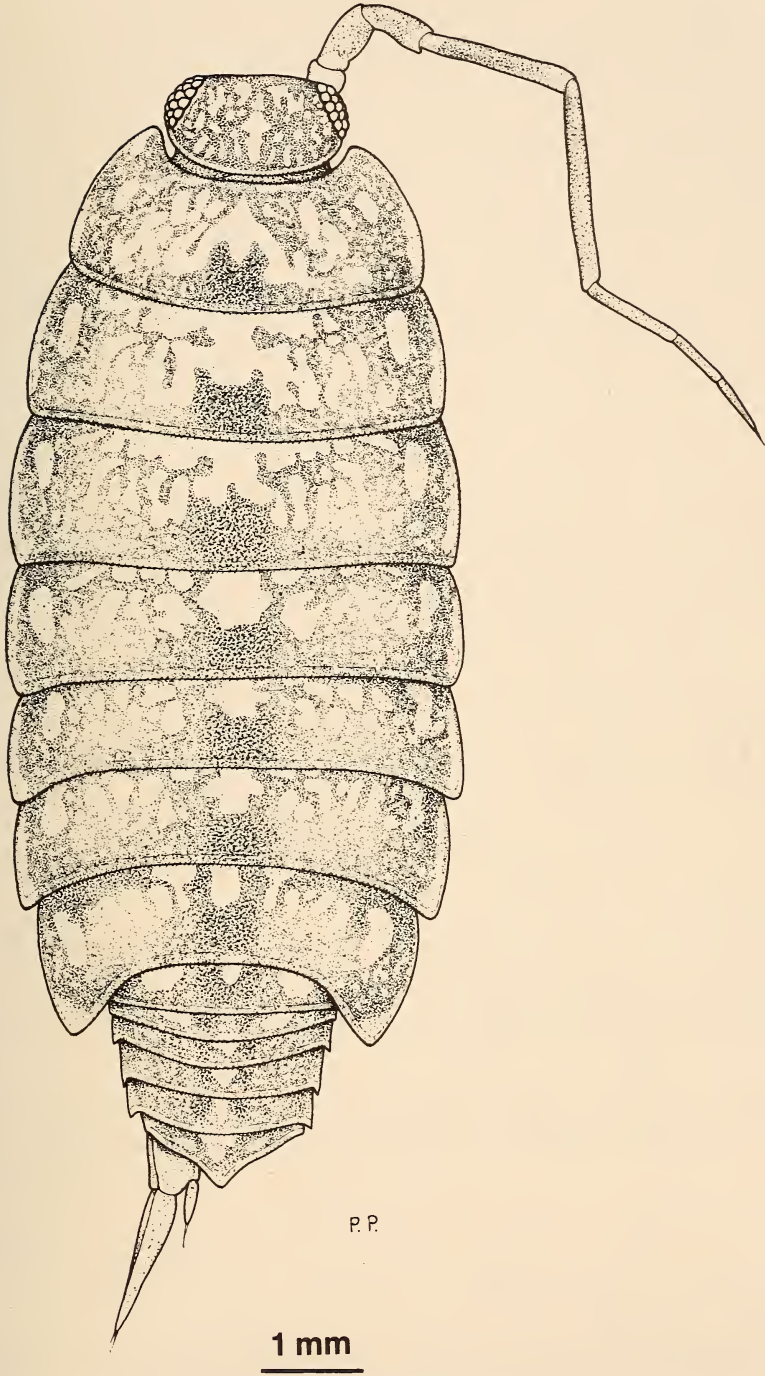


Fig. 11. *Natsalscia mina* (Budde-Lund, 1885). Adult female.

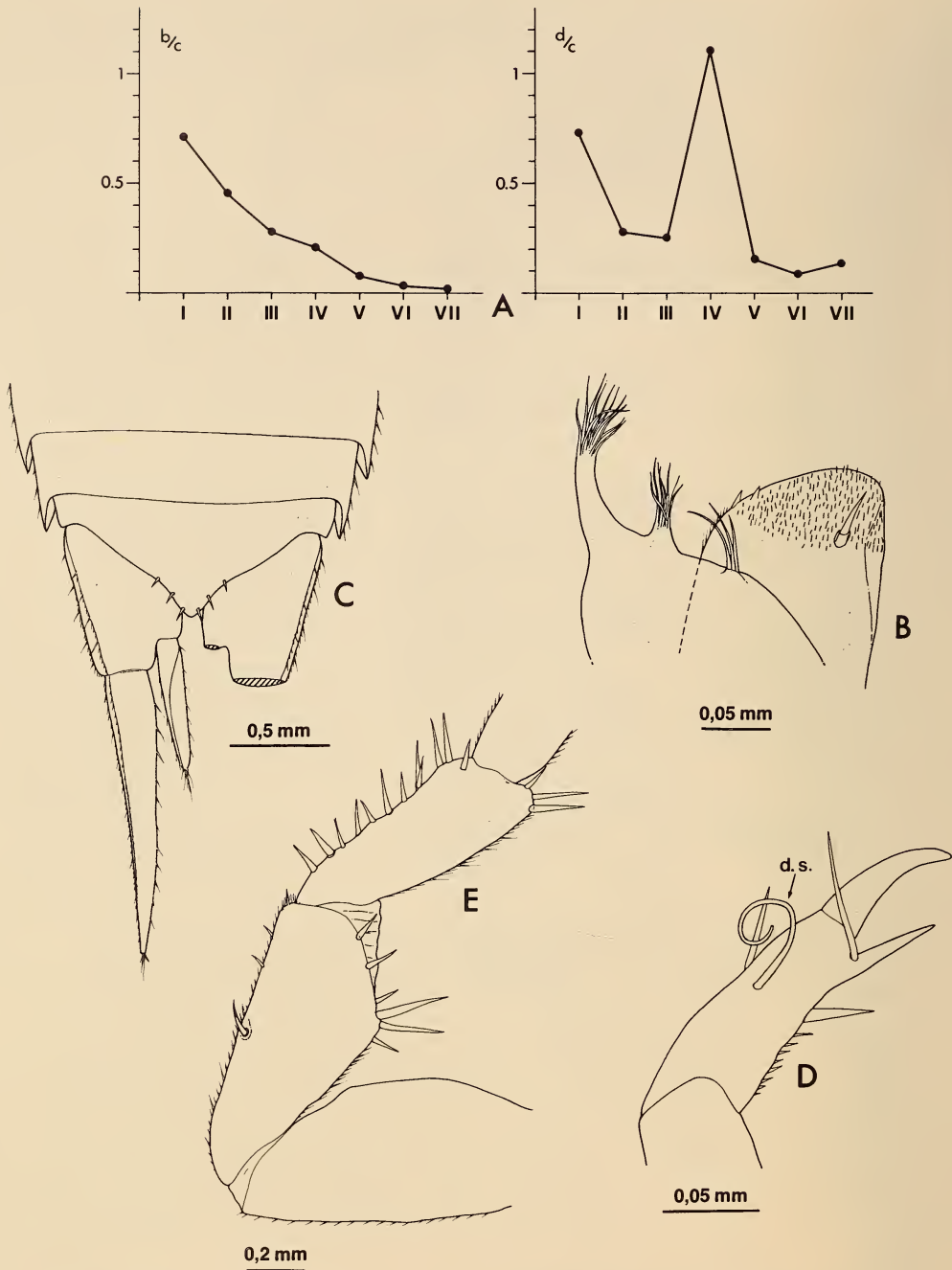


Fig. 12. *Natsalscia mina* (Budde-Lund, 1885). A. b/c and d/c co-ordinates. B. Apex of maxilliped. C. Telson and uropods. D. Pereopod 1 dactylus: d.s.—dactylar seta. E. Pereopod 7 ischium and merus (δ).

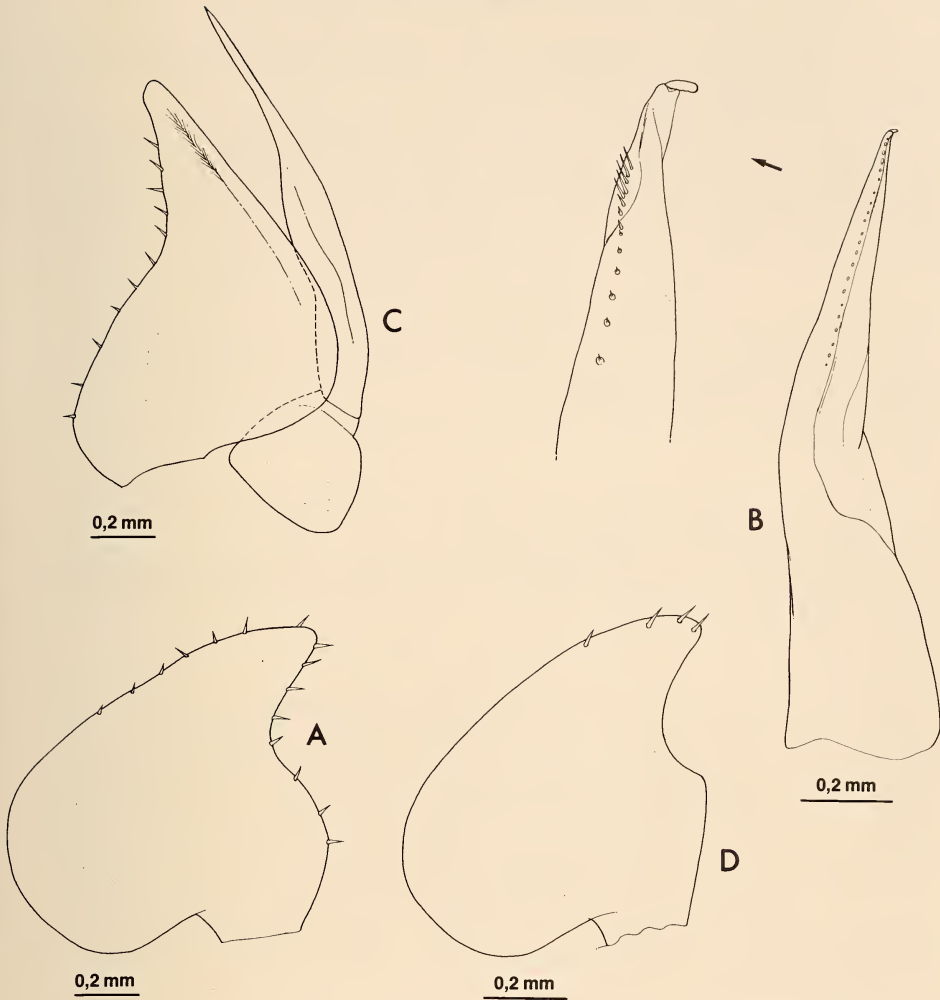


Fig. 13. *Natalscia mina* (Budde-Lund, 1885). A. Pleopod 1 exopodite (δ). B. Pleopod 1 endopodite (δ). C. Pleopod 2 (δ). D. Pleopod 1 exopodite in the male from Umgazana.

triangular point bent outward, outer margin sinuose (Fig. 13A); endopodite with a row of spines and a narrow hyaline lobe at the apex (Fig. 13B). Pleopod 2 as in Figure 13C.

Remarks

As mentioned above, a comparison of type material of *Philoscia warreni* and *P. mina* showed these to be the same species. The original material of *P. mina* collected by Drege is labelled 'Cape' but, as pointed out by Barnard (1932: 244), these specimens probably come from Natal.

As with *Nahia hirsuta*, the uncertainties and errors in identification by the early authors make it impossible to define the exact distribution of *Nataliscia mina*. It is definitely common in southern Natal.

The male from Umgazana has the outer margin of pleopod 1 exopodite truncated instead of rounded (Fig. 13D), while all the other characters coincide with the typical *N. mina*. This could be a specific difference but the authors cannot reach a firm conclusion due to the insufficient material.

Nataliscia cingulata (Barnard, 1932)

Fig. 14

Philoscia (Setaphora) cingulata Barnard, 1932: 244, figs 16o, 17b, 18b, 19b, Brian, 1953: 9.

Philoscia cingulata: Barnard, 1949: 403.

Setaphora cingulata: Ferrara & Taiti, 1979: 118. Taiti & Ferrara, 1980: 83.

Material

Barnard Collection. Natal: 1 ♂, 9 ♀♀, Port Shepstone, leg. K. H. Barnard, 1912, BM-1933:1:25:87-92 (syntypes).

New material. Transkei: ? 10 ♀♀, Port St. Johns, leg. B. F. Kensley, 14 August 1974, SAM-A16862.

Description

♂ 6 mm long; ♀ ovig. 7 mm long. Colour as described by Barnard: 'Pale yellowish, with broad greyish bands across front of head between eyes, and across the pereon and pleon segments, on the latter usually interrupted in the middle line; antennae pale greyish, legs pale without gray marks.' Eye with eighteen to twenty ommatidia. Each pereon segment with about ten gland pores per side arranged along the whole sulcus marginalis. Noduli laterales with b/c and d/c co-ordinates as in Figure 14A. Telson with pointed apex (Fig. 14B). Antenna: ratio of flagellum joints 6:5:5. Dactylar seta of pereopods flagelliform, slightly enlarged at apex (Fig. 14C). Uropod as in Figure 14D.

Male

Pereopods 1-2 carpus and merus with a brush of spines as in *N. thomsoni*. Pereopods 3-7 are missing in the only male. Pleopod 1 exopodite with short triangular posterior point (Fig. 14E); endopodite dorsally with a row of long spines close to the apex (Fig. 14F). Pleopod 2 endopodite much longer than exopodite (Fig. 14G).

Remarks

The examination of the type material showed that this species belongs to the genus *Nataliscia*. *N. cingulata* closely resembles *N. mina* from which it differs by the smaller size, presence of a brush of spines on the anterior pereopods and the shorter posterior point of pleopod 1 exopodite ♂. The colour pattern is also a distinguishing character.

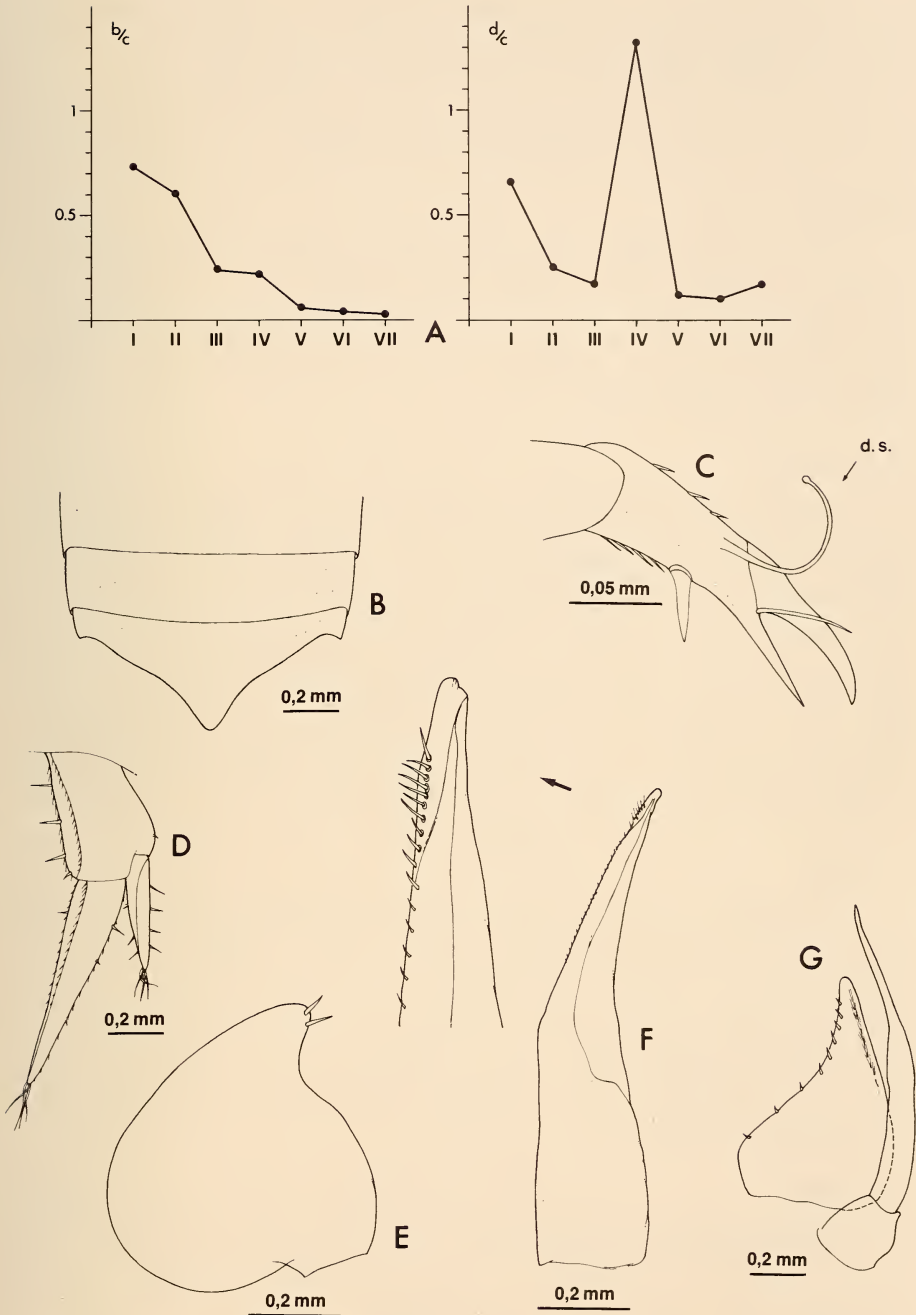


Fig. 14. *Natalscia cingulata* (Barnard, 1932). A. b/c and d/c co-ordinates. B. Telson. C. Pereopod 1 dactylus: d.s.—dactylar seta. D. Left uropod. E. Pleopod 1 exopodite (δ). F. Pleopod 1 endopodite (δ). G. Pleopod 2 (δ).

The specimens from Port St. Johns are tentatively ascribed to this species, due to the lack of males.

N. cingulata is recorded from Howick and Port Shepstone.

Natalscia thomsoni sp. nov.

Fig. 15

Material

Natal: 1 ♂, Claridge, near Pietermaritzburg, leg. S. Taiti and K. C. Thomson, 27 April 1980, holotype SAM-A16863; 2 ♂♂, 2 ♀♀, same data, paratypes SAM-A16864; 33 ♂♂, 28 ♀♀, same data, paratypes MZUF-1010; 1 ♀, Town Bush, leg. S. Taiti and J. H. Londt, 22 April 1980, paratype MZUF-1011; 2 ♂♂, 2 ♀♀, Karkloof, leg. S. Taiti and J. H. Londt, 24 April 1980, paratypes MZUF-1012.

Description

♂ 8 mm long; ♀ 9 mm long. Colour extremely variable: whitish with isolated, more or less clustered chromatophores; or yellowish with three longitudinal black stripes: a median one from cephalon to pleon segment 3 and two at the base of pereon epimera; the lateral stripes have a row of white spots in the middle; pleon segments 4-5 and telson black; antennae with a white ring at the base of joints 4 and 5; pereopods, pleopods and uropods slightly pigmented. Eye with about twenty-five ommatidia. Each pereon segment with about fifteen gland pores per side arranged along the whole sulcus marginalis. Co-ordinates of noduli laterales as in Figure 15A. Telson (Fig. 15B) with almost straight sides. Antenna: ratio of flagellum joints 8:6:5. Pereopods with a dactylar seta as in Figure 15D.

Male

Pereopods 1-2 merus and carpus with thick brushes of spines (Fig. 15C). Pereopod 3 merus and carpus with sparse brushes. Pereopod 7 (Fig. 15D) ischium with concave sternal surface equipped with short spines, closer together distally; merus with the same spines at the base. Pleopod 1 exopodite (Fig. 11E) with posterior point bent outwards and with one spine at apex; outer margin distally concave with a small triangular protrusion, missing in juveniles (Fig. 11F); endopodite with an elongated hyaline lobe at apex (Fig. 11G). Pleopod 2 as in Figure 11H.

Etymology

The new species is named for Mr K. C. Thomson, Pietermaritzburg, for his invaluable help in collecting material.

Remarks

N. thomsoni differs from *N. mina* by the presence of thick brushes of spines on pereopods 1-2 ♂ carpus and merus and the distinctly concave sternal

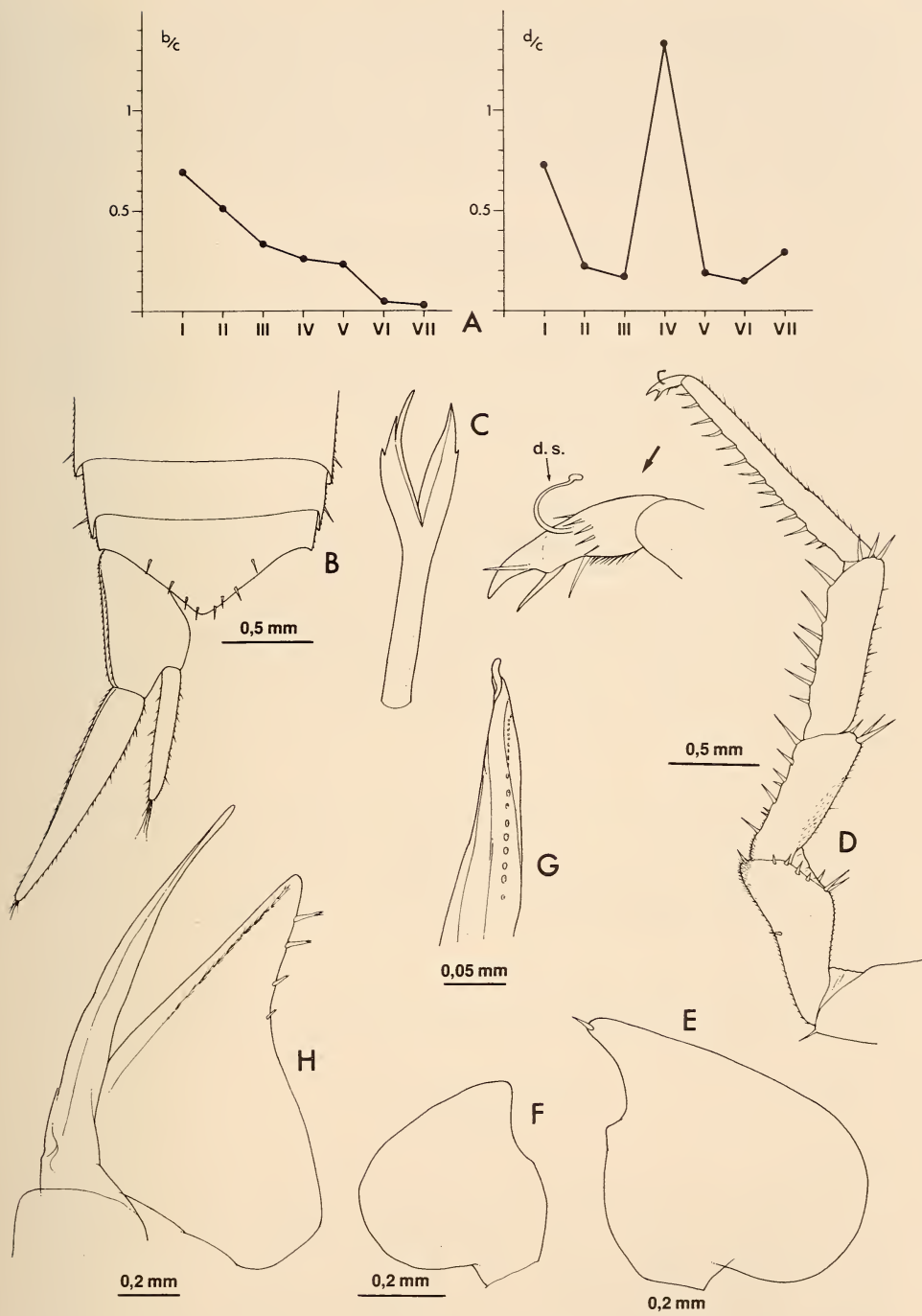


Fig. 15. *Natalscia thomsoni* sp. nov. A. b/c and d/c co-ordinates. B. Telson and left uropod. C. Spine of pereopod 1 carpus (δ). D. Pereopod 7 (δ); d.s.—dactylar seta. E. Pleopod 1 exopodite (δ). F. Pleopod 1 exopodite (δ) juvenile. G. Apex of pleopod 1 endopodite (δ). H. Pleopod 2 (δ).

margin of pereopod 7 ischium which is straight in *N. mina*; from *N. cingulata* which lacks both a hyaline lobe on the pleopod 1 ♂ endopodite apex and a triangular protrusion on the outer margin of pleopod 1 ♂ exopodite; from *N. appletoni* sp. nov. by the shape of pereopod 7 ♂ ischium (cf. Figs 15D and 17D) and pleopod 1 ♂ (cf. Figs 15E, G and 17E–F); from *N. rotundata* sp. nov. which has a semicircular rather than a triangular telson.

Natalscia rotundata sp. nov.

Fig. 16

Material

Natal: 1 ♂, Umdloti, leg. S. Taiti and K. C. Thomson, 26 April 1980, holotype SAM–A16865; 1 ♂, 1 ♀, same data, paratypes SAM–A16866; 3 ♂♂, 6 ♀♀, same data, paratypes MZUF–1013.

Description

♂ 5,5 mm long; ♀ 6 mm long. Yellowish colour mottled with brown; antenna with joints 1–3 of peduncle reddish; pereopods and pleopods slightly pigmented. Eye with sixteen to eighteen ommatidia. Back equipped with upright setae, closer together on pleon; each pereon segment with five to ten gland pores per side arranged along the whole sulcus marginalis; b/c and d/c co-ordinates of noduli laterales as in Figure 16A. Telson semicircular (Fig. 16B). Antenna: ratio of flagellum joints 10 : 7 : 8. Dactylar seta (Fig. 16C) as in *N. thomsoni*.

Male

Pereopods 1–2 merus and carpus with sparse brushes of spines similar to *N. thomsoni*. Pereopod 7 (Fig. 16C) ischium with sternal margin swollen in the middle. Pleopod 1 exopodite (Fig. 16D) with acute posterior point; endopodite with some spines close to apex (Fig. 16E). Pleopod 2 as in Figure 16F.

Etymology

The specific name refers to the rounded telson, a character which immediately separates *N. rotundata* from all the other species of *Natalscia*.

Natalscia appletoni sp. nov.

Fig. 17

Material

Zululand: 1 ♂, Lake Sibaya Research Station, garden, leg. C. C. Appleton, 7 January 1973, No. 8L, holotype SAM–A16867; 6 ♂♂, 3 ♀♀, same data, paratypes SAM–A16868; 7 ♂♂, 13 ♀♀, near Lake Sibaya Research Station, coastal dune forest, leg. C. C. Appleton, 18 December 1973, No. 13E, paratypes SAM–A16869; 1 ♀, same data, 29 July 1973, No. 49L, paratype

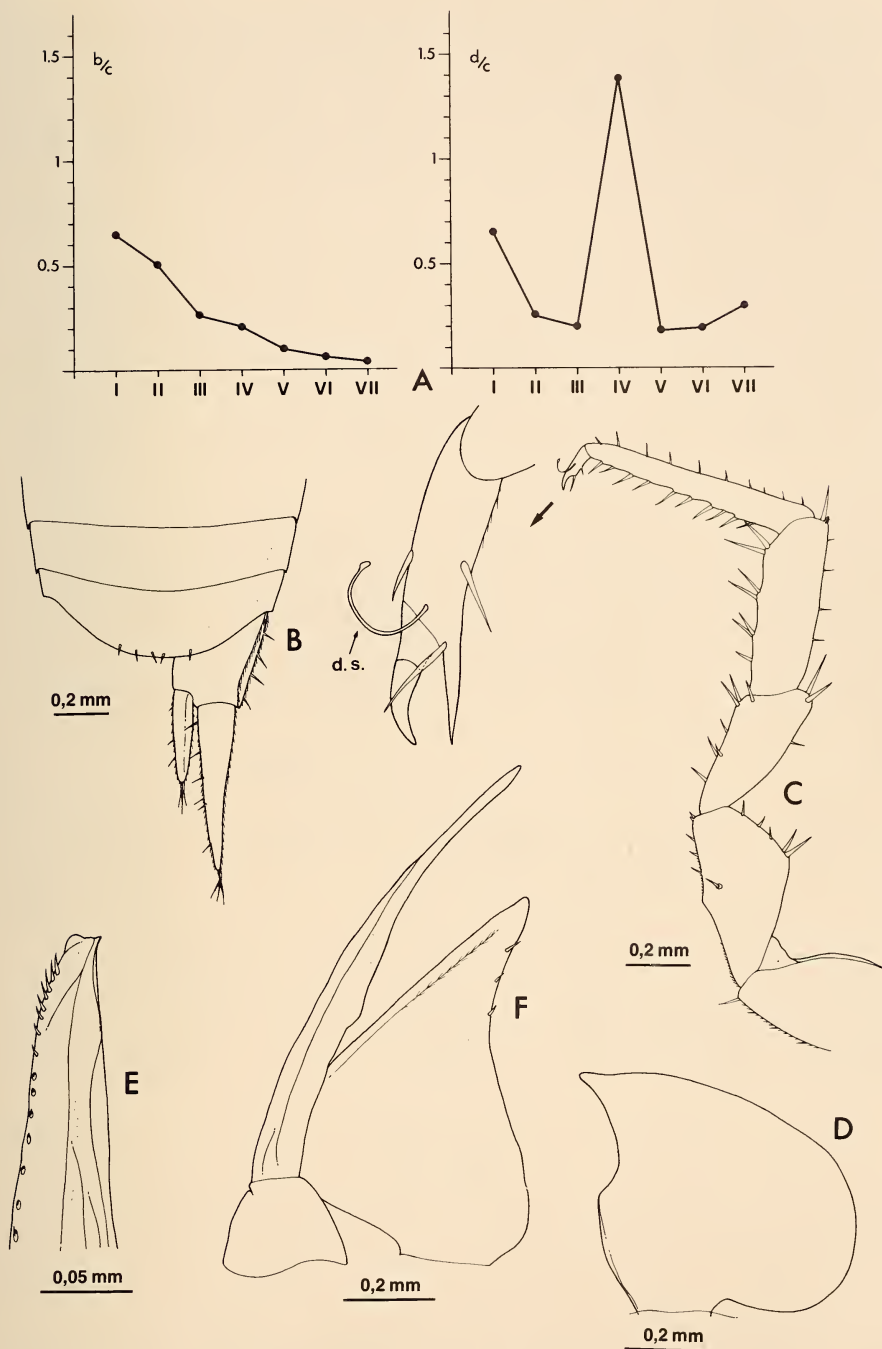


Fig. 16. *Natalscia rotundata* sp. nov. A. b/c and d/c co-ordinates. B. Telson and right uropod. C. Pereopod 7 (δ): d.s.—dactylar seta. D. Pleopod 1 exopodite (δ). E. Apex of pleopod 1 endopodite (δ). F. Pleopod 2 (δ).

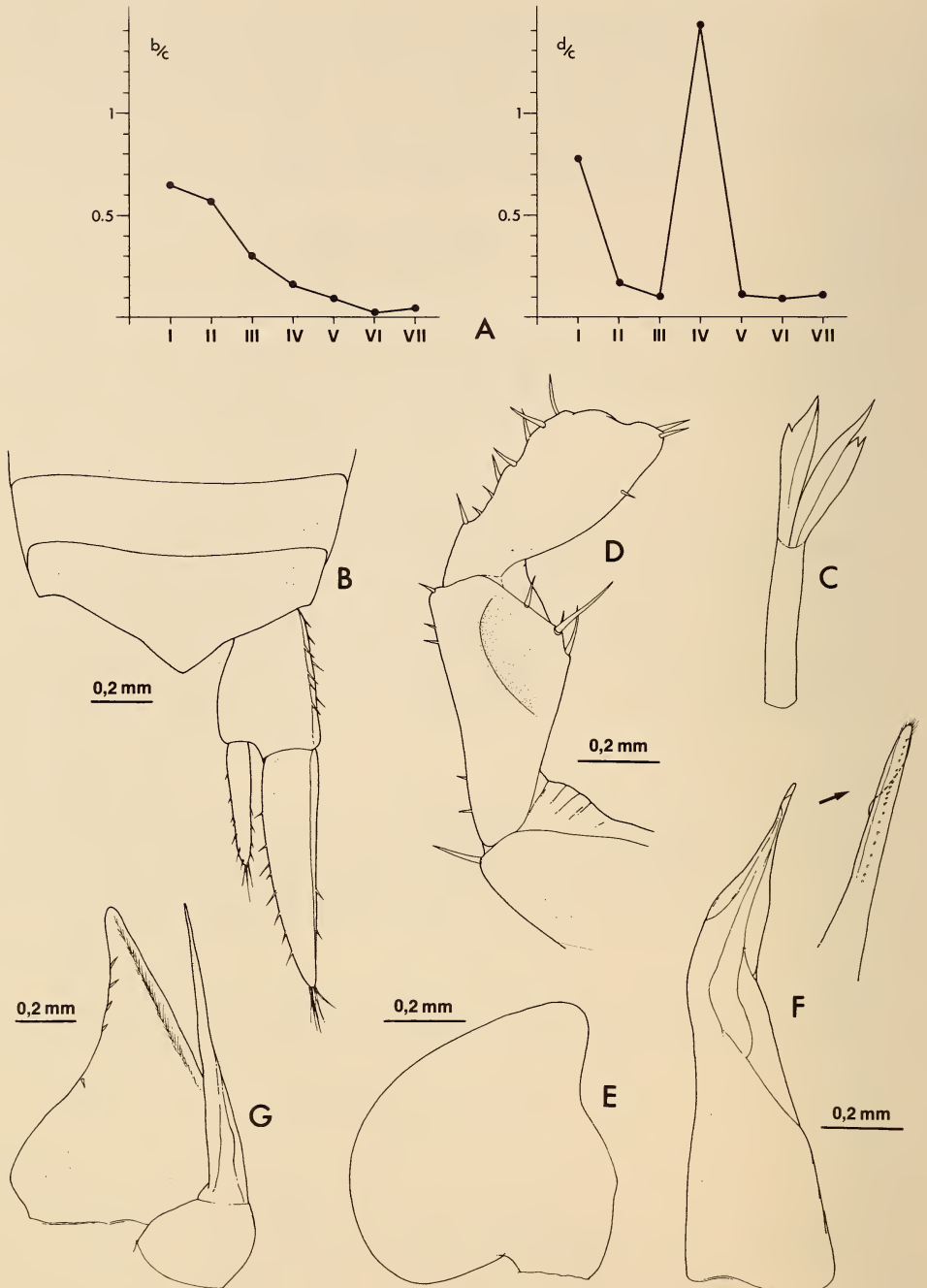


Fig. 17. *Natalscia appletoni* sp. nov. A. b/c and d/c co-ordinates. B. Telson and right uropod. C. Spine of pereopod 1 carpus (δ). D. Pereopod 7 ischium and merus (δ). E. Pleopod 1 exopodite (δ). F. Pleopod 1 endopodite (δ). G. Pleopod 2 (δ).

SAM-A16870; 3 ♂♂, 21 ♀♀, same data, date ?, No. 18D, paratypes SAM-A16871; 6 ♀♀, same data, date ?, No. 18L, paratypes SAM-A16872; 1 ♀, same data, 10 October 1973, No. 76E, paratypes SAM-A16873; 2 ♀♀, same data, date ?, No. 62F, paratypes SAM-A16874; 2 ♀♀, same data, date ?, No. 71Q, paratypes SAM-A16875.

Description

6 mm long. Pale brown colour; antenna with joints 1-3 and proximal part of 5 yellowish; pereopods and pleopods pigmented. Eye with twenty to twenty-two ommatidia. Each pereon segment with about ten gland pores per side arranged along the whole sulcus marginalis; b/c and d/c co-ordinates of noduli laterales as in Figure 17A. Telson (Fig. 17B) with apex at an obtuse angle. Antenna with subequal flagellum joints. Dactylar seta of pereopods as in *N. rotundata*.

Male

Pereopods 1-2 carpus with brushes of spines as in Figure 17C. Pereopod 7 ischium with sternal margin almost straight and a semicircular depression on rostral surface (Fig. 17D). Pleopod 1 exopodite (Fig. 17E) with rounded posterior point, outer margin feebly concave; endopodite (Fig. 17F) with a long styliform distal part, apex equipped with tiny setae. Pleopod 2 as in Figure 17G.

Etymology

This species is named for Dr C. C. Appleton, Congella, who collected these specimens.

Remarks

N. appletoni differs from all the other species of *Natalscia* by the presence of a semicircular depression on pereopod 7 ♂ ischium; the largely rounded posterior point of pleopod 1 ♂ exopodite and the styliform pleopod 1 ♂ endopodite apex.

Natalscia sp.

Fig. 18

Philoscia (Setaphora) mina: Barnard, 1960a: 47. Lawrence, 1977: 175.

Material

Barnard Collection. Transvaal: 1 ♂, 3 ♀♀, Graskop, leg. R. F. Lawrence, March 1960, NM-6509; 3 ♀♀, Marieskop, ± 6 000 ft, leg. R. F. Lawrence, March 1960, NM-6505.

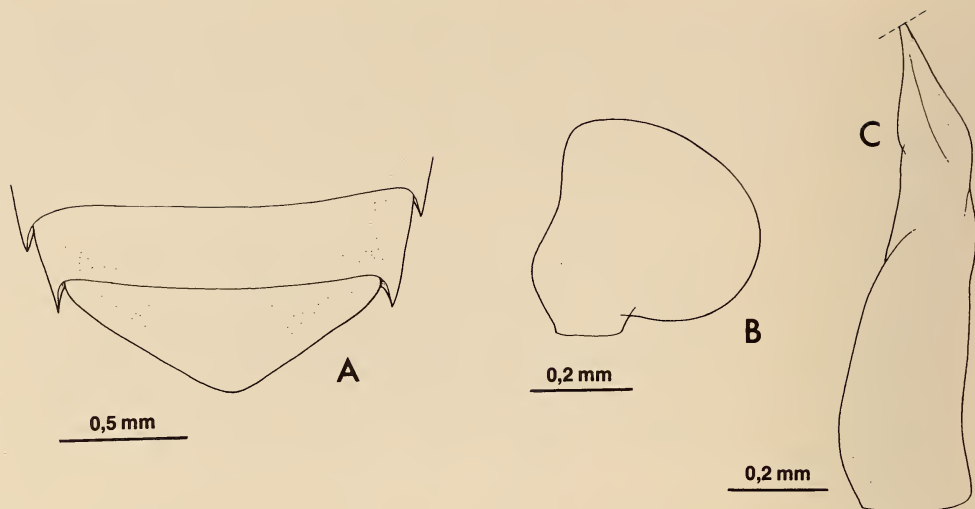


Fig. 18. *Natalscia* sp. A. Telson. B. Pleopod 1 exopodite (δ). C. Pleopod 1 endopodite (δ).

Remarks

Barnard (1960a) identified these specimens as *Philoscia* (*Setaphora*) *mina*. A check of his material showed that these belong to the genus *Natalscia* but are not conspecific with *N. mina*. In fact, the shape of the telson (Fig. 18A) and general shape of pleopod 1 δ endopodite (Fig. 18C) differ notably from those of *N. mina*. The only male available (5 mm long) is probably a juvenile, as suggested by the shape of pleopod 1 exopodite (Fig. 18B), and has the apices of pleopod 1 endopodites damaged. Thus a distinctive description is not possible.

In discussing this material, Barnard (1960a: 48) stated that he also saw 'specimens from Inhaca Island (Delagoa Bay) which appeared conspecific'. It is not clear whether he referred to the typical *N. mina* or to the specimens from Transvaal. The re-examination of the material from Inhaca Island (Mozambique) is necessary for a correct identification.

Genus *Barnardoscia* nov.

Diagnosis

Sulcus marginalis and gland pores present; one series of noduli laterales on each side of pereon segments 1-6; two noduli laterales on each side of pereon segment 7; d/c co-ordinates with a maximum on pereon segment 4 and a lower one on segment 1 (Figs 20A and 22A). Frontal line absent; supra-antennal line present. Pereon segments 5-7 with acute posterior angles (Fig. 20C). Pleon epimera reduced but with long posterior points. Molar penicil of mandible consisting of a single unbranched seta; outer branch of maxilla 1 with 4 + 6 (5 cleft) teeth; endite of maxilliped with a small penicil (Fig. 20B). Pereopods

with a flagellar dactylar seta. Pleopod exopodites without respiratory areas. Uropod protopodite grooved on outer margin; insertion of endopodite proximal to that of exopodite.

Type species

Philoscia (Setaphora) demarcata Barnard, 1932, from South Africa.

Etymology

The genus is named for Dr K. H. Barnard to whom we are indebted for many important papers on South African terrestrial Isopoda.

Remarks

The re-examination of the type material of *Philoscia (Setaphora) demarcata* showed that this species belongs to a new genus, *Barnardoscia*, akin to *Nataloscia* from which it is distinguished by the presence of four noduli laterales on the pereon segment 7 and the presence of a penicil on maxilliped.

Barnardoscia includes two species, both from South Africa.

KEY TO THE SPECIES OF *BARNARDOSCIA*

1. Pereopod 7 ♂: ischium with a depression on the middle of the rostral surface (Fig. 20G).
Pleopod 1 ♂: exopodite with posterior point equipped with one or two apical spines (Fig. 21A–C)..... *B. demarcata* (Barnard)
- Pereopod 7 ♂: ischium with a depression close to the base of the rostral surface (Fig. 22C).
Pleopod 1 ♂: exopodite without posterior point and spines (Fig. 22D) *B. maculata* sp. nov.

Barnardoscia demarcata (Barnard, 1932)

Figs 19–21

Philoscia (Setaphora) demarcata Barnard, 1932: 244, figs 16q, 17c, 18a, 19b.

Philoscia demarcata: Barnard, 1937: 164. Barnard, 1949: 402. Brian, 1953: 9.

Setaphora demarcata: Ferrara & Taiti, 1979: 118. Taiti & Ferrara, 1980: 83.

Material

Barnard Collection. Natal: 4 ♂♂, 3 ♀♀, (in fragments), Pietermaritzburg, leg. K. H. Barnard, 1917, BM-1933:1:25:93–97 (syntypes).

New material. Natal: 17 ♂♂, 42 ♀♀, Claridge, Pietermaritzburg, leg. S. Taiti, 27 April 1980, MZUF-1014; 5 ♂♂, 25 ♀♀, Cedara, near Pietermaritzburg, leg. S. Taiti, 20 April 1980, MZUF-1015; 23 ♂♂, 34 ♀♀, Karkloof, near Howick, leg. S. Taiti and J. H. Londt, 24 April 1980, MZUF-1016; 1 ♂, 3 ♀♀, Town Bush, near Pietermaritzburg, leg. S. Taiti and J. H. Londt, 22 April 1980; MZUF-1017; 1 ♂, 1 ♀, Lundys Hill, about 70 km W of Pietermaritzburg, leg. S. Taiti and K. C. Thomson, 25 April 1980, MZUF-1018; 1 ♂, Bulwer, leg. S. Taiti and K. C. Thomson, 25 April 1980, MZUF-1019.

Description

♂ 7,5 mm long; ♀ 9 mm long. Dark brown with light mottling. Eye with about twenty large ommatidia. Each pereon segment with seventeen to twenty



Fig. 19. *Barnardoscia demarcata* (Barnard, 1932). Adult female.

gland pores per side; b/c and d/c co-ordinates of noduli laterales as in Figure 20A. Pereon segments 2–4 demarcated in some female specimens. Telson (Fig. 20D) with concave sides, narrowly rounded apex. Flagellum joints of antenna subequal.

Male

Cephalon with a bulbous profrons (compare Fig. 20E, ♀, and Fig. 20F, ♂). Pereopods 1–3 merus and carpus with sparse brushes of spines similar to those of *Nataloscia thomsoni*. Pereopod 7 ischium (Fig. 20G) with a large

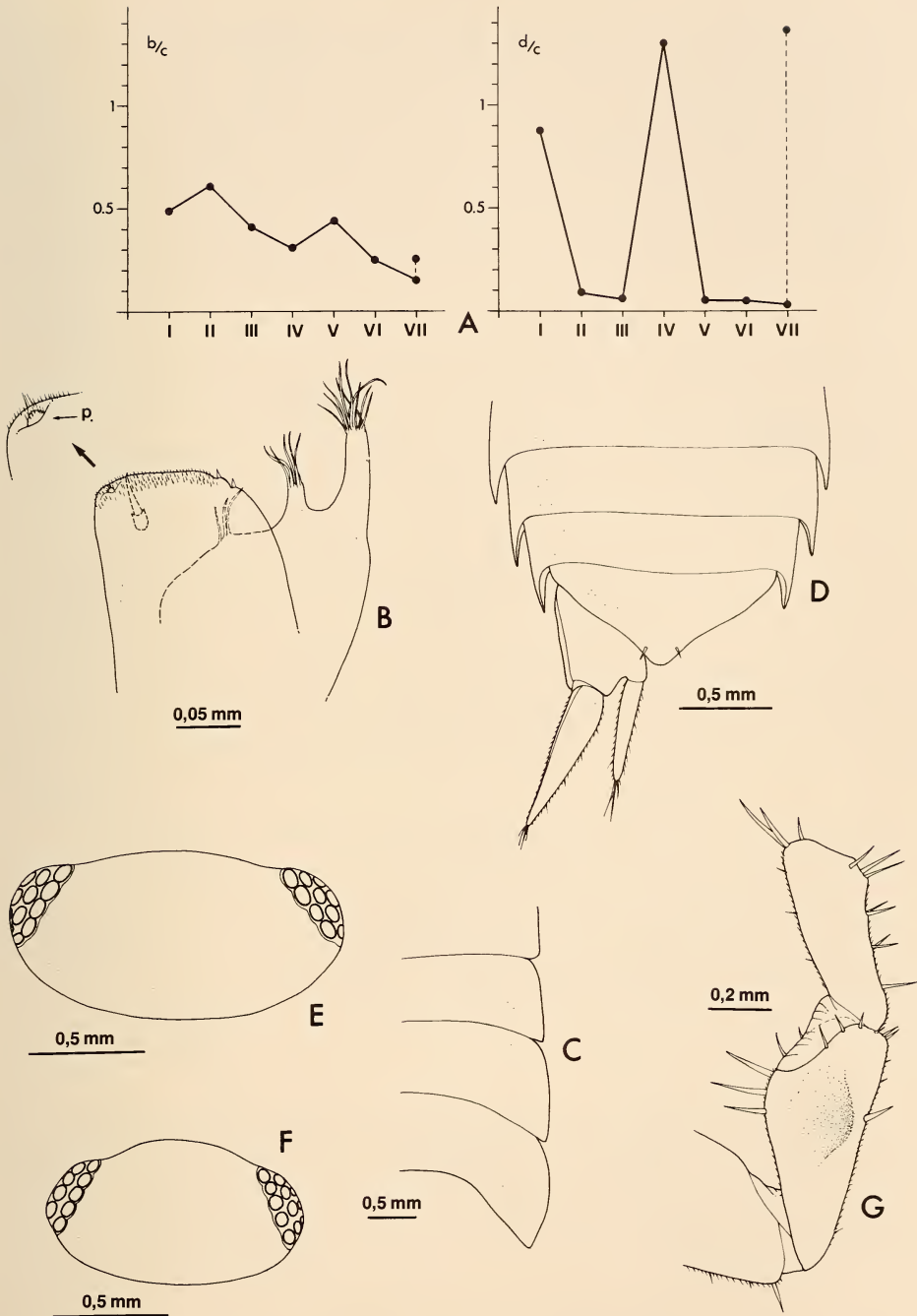


Fig. 20. *Barnardoscia demarcata* (Barnard, 1932). A. b/c and d/c co-ordinates. B. Apex of maxilliped: p.—penicil. C. Pereon epimera 4-7, right. D. Telson and left uropod. E. Cephalon from above (♀). F. Cephalon from above (♂). G. Pereopod 7 ischium and merus (♂).

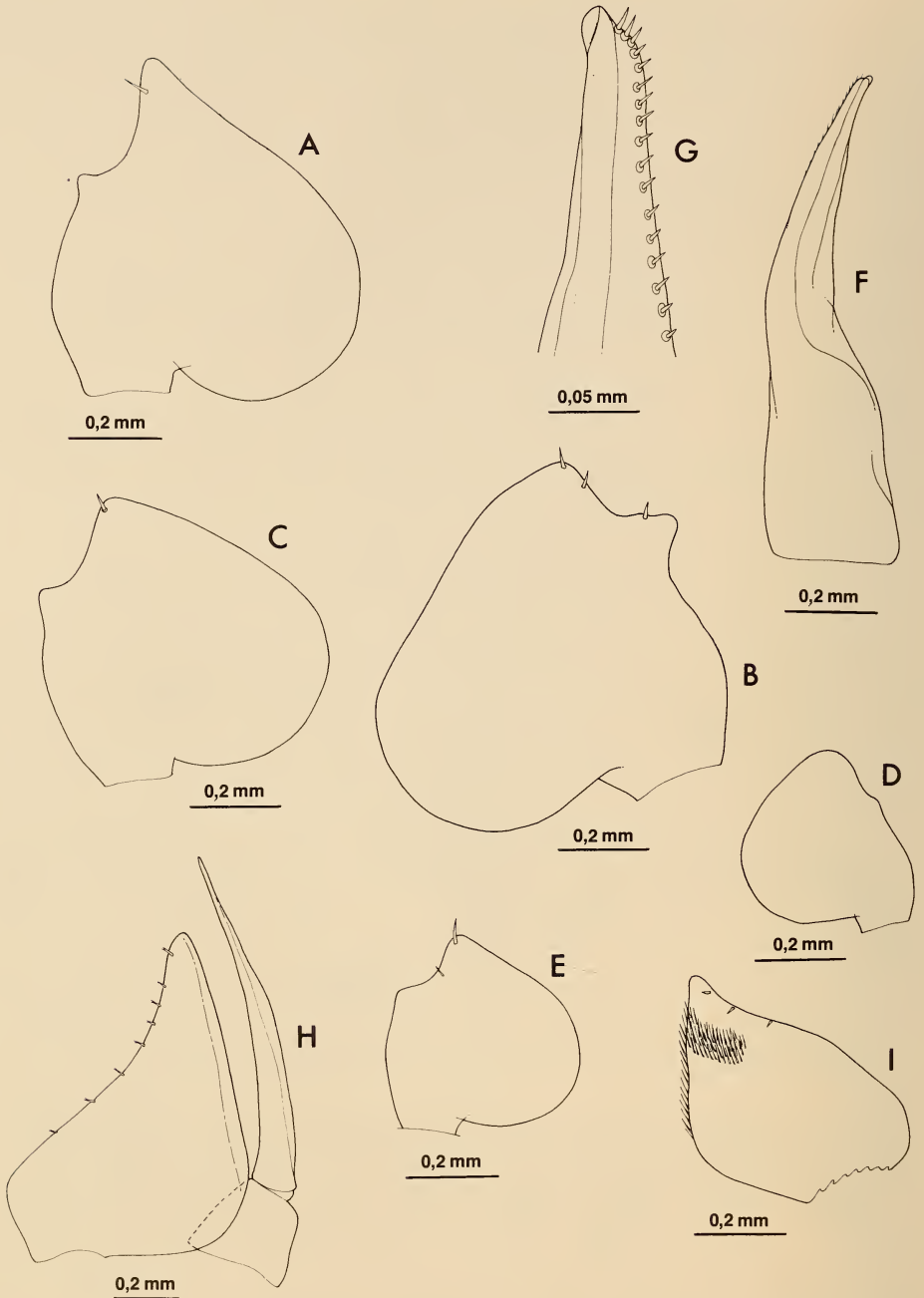


Fig. 21. *Barnardoscia demarcata* (Barnard, 1932). A. Pleopod 1 exopodite (δ). B. Pleopod 1 exopodite (δ) in another specimen. C. Pleopod 1 exopodite (δ) in one syntype from Pietermaritzburg. D. Pleopod 1 exopodite (δ), juvenile 4 mm long. E. Pleopod 1 exopodite (δ), juvenile 4.7 mm long. F. Pleopod 2 (δ). G. Apex of pleopod 1 endopodite (δ). H. Pleopod 2 (δ). I. Pleopod 5 exopodite (δ).

depression on the middle of the rostral surface. Pleopod 1: exopodite varies in shape (Fig. 21A–C). In some specimens the posterior, rather than the external, point, is the most developed (Fig. 21A), while in other specimens the posterior point is more rounded and less pronounced, and the external point is the most developed (Fig. 21B). During the course of development (Fig. 21D–E) the external point progressively increases in size with respect to the posterior point.

Apex of pleopod 1 endopodite (Fig. 21F–G) with spines and a small triangular lobe. Pleopod 2 as in Figure 21H. Pleopod 5 exopodite with straight medial edge (Fig. 21I).

Remarks

The suture at the base of the pereon epimera 2–4 ♀ is a sporadic trait, as it is in every other species of terrestrial isopod presenting this character.

The external point of the pleopod 1 exopodite ♂ develops progressively with the growth of the specimen. This appendage also varies greatly in shape in fully adult males (see Fig. 21A–C) of the same lot.

Barnardoscia maculata sp. nov.

Fig. 22

Material

Natal: 1 ♂, near Bulwer, leg. S. Taiti, 25 April 1980, holotype SAM–A16876; 2 ♂♂, 2 ♀♀, same data, paratypes SAM–A16877; 7 ♂♂, 12 ♀♀, 20 juv., same data, paratypes MZUF–1020.

Description

♂ 7 mm long; ♀ 7,5 mm long. Iron-grey with lighter mottling, a white stripe at the base and a pale spot in the middle of pereon epimera. Eye with about twenty-five small ommatidia. Each pereon segment with ten to twelve gland pores per side, arranged along the whole length; b/c and d/c co-ordinates of noduli laterales as in Figure 22A. None of the females with pereon epimera 2–4 demarcated. Telson with almost straight sides, rounded apex (Fig. 22B). Antenna with flagellum joints subequal.

Male

Cephalon as in *B. demarcata*. Pereopods 1–2 carpus and merus with sparse spines of the same type as in *Nataliscia thomsoni*. Pereopod 7 ischium with a depression close to the base on the rostral surface (Fig. 22C). Pleopod 1 exopodite (Fig. 22D–E) typically without posterior point and apical spine; endopodite (Fig. 22F) similar to that of *B. demarcata*. Pleopod 5 exopodite with oblique medial edge (Fig. 22G).

Etymology

The specific name refers to the characteristic coloration of this species.

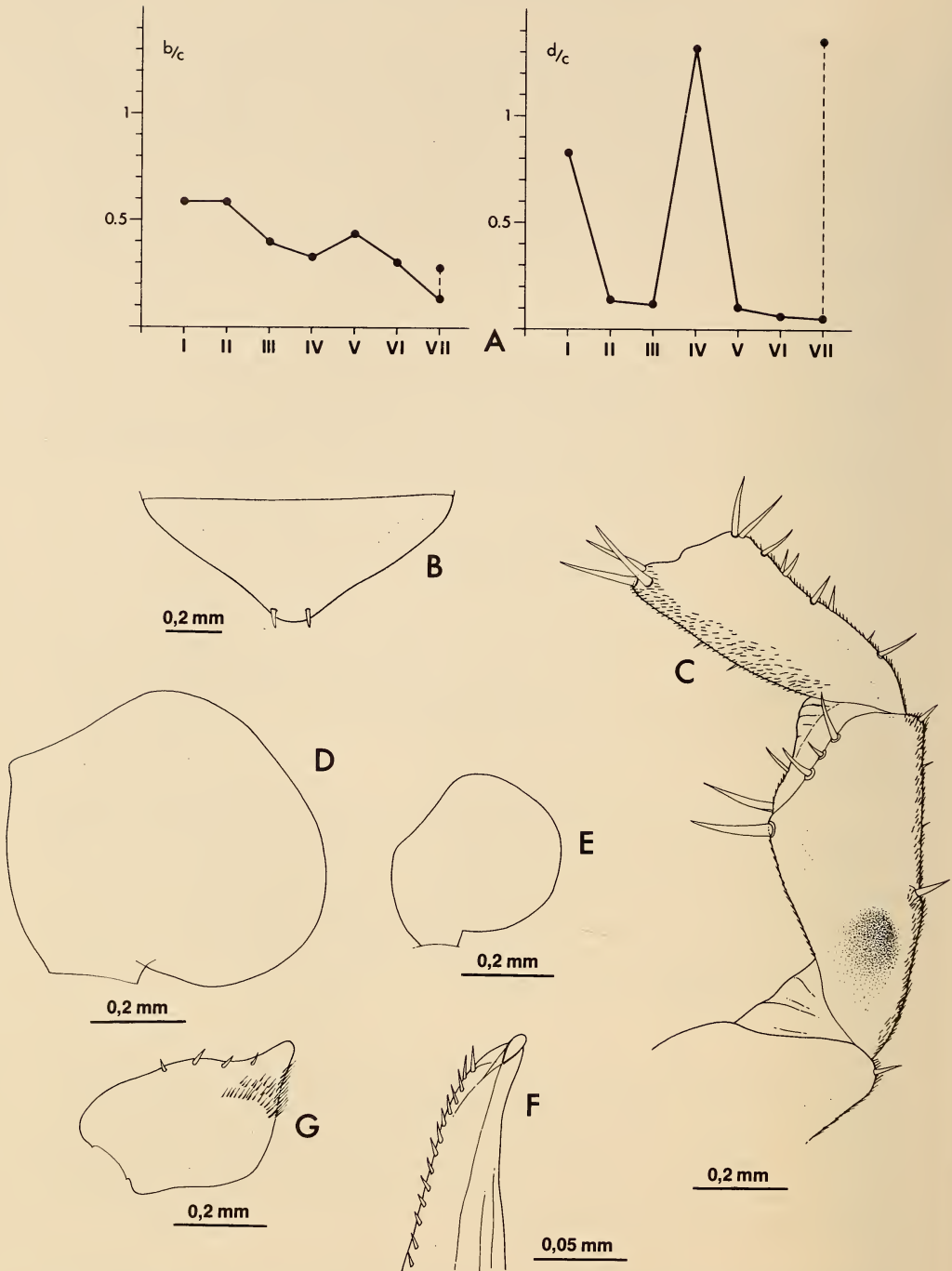


Fig. 22. *Barnardoscia maculata* sp. nov. A. b/c and d/c co-ordinates. B. Telson. C. Pereopod 7 ischium and merus (δ). D. Pleopod 1 exopodite (δ). E. Pleopod 1 exopodite (δ), juvenile 4.2 mm long. F. Apex of pleopod 1 endopodite (δ). G. Pleopod 5 exopodite (δ).

Remarks

The new species is very close to *B. demarcata* from which it differs by the (i) different colour pattern, (ii) smaller and more numerous ommatidia, (iii) fewer number of gland pores, and (iv) male modifications: pereopod 7 ischium with a smaller depression much closer to the base, pleopod 1 exopodite with truncated apex, shape of pleopod 5 exopodite.

SYSTEMATIC DISCUSSION

To date the following species were known in South Africa:

- Aphiloscia vilis* (Budde-Lund, 1885)
- Benthanops fulva* Barnard, 1932
- Nahia hirsuta* (Budde-Lund, 1906)
- Setaphora mina* (Budde-Lund, 1885)
- Setaphora cingulata* Barnard, 1932
- Setaphora demarcata* Barnard, 1932
- Setaphora ocellata* Barnard, 1960
- Chaetophiloscia elongata* (Dollfus, 1884)
- Philoscia muscorum* (Scopoli, 1763)

All the species listed were re-examined, with the exception of the last two which are of Mediterranean origin and whose presence in South Africa—if confirmed—is due to importation by man. In the authors' opinion the *Chaetophiloscia elongata* quoted by Dollfus (1895) corresponds to *Nahia hirsuta*, while the records of *Philoscia muscorum* from Natal, 'Hilton Road and Mid-Illovo' (Collinge 1920), are definitely a misidentification (see also Verhoeff 1942).

Five new species have also been described. Of even greater interest is the fact that it was possible to assign each species to the correct genus, each of which was redefined according to modern criteria.

As a result, *Benthanops* Barnard, 1932, and *Ctenoscia* Verhoeff, 1928, which appeared to be identical according to the early descriptions, proved to be distinct even if extremely close genera.

The study of most of Barnard's material allowed the authors to redefine the genus *Nahia* Budde-Lund, 1908, clarify the identifying traits of the only species known to date, *N. hirsuta*, and describe a new one, *N. louwi*.

The task of correctly collocating the four species assigned by Barnard (1932, 1960a) to *Setaphora* Budde-Lund, 1908, was complicated above all by the uncertain diagnosis of this genus. It was established by Budde-Lund (1908) for *Philoscia suarezi* Dollfus, 1895, from Diego-Suarez in Madagascar. Budde-Lund reportedly found this species not only in Madagascar but on several islands of the west Indian Ocean, and later (1910) in east Africa (Kibonoto, Meru and Kibosho). In 1913, Budde-Lund published a list of species belonging to the genus *Setaphora*, including two new species from the Seychelles: *S. ovata* and *S. pallidemaculata*. Herold (1931) redefined the genus

and described some species from the Sunda islands without, however, adding any truly unequivocal traits. The same can be said for the diagnosis presented by Barnard (1932). While Taiti & Ferrara (1980) and Ferrara & Taiti (in press) presented a diagnosis of this genus based on the study of the syntypes of *S. ovata* and *S. pallidemaculata*, they affirmed that only the study of the type species *S. suarezi* could provide an exact diagnosis.

As the problem of identifying the genus *Setaphora* reappeared with the South African material, it was decided to check the specimens of *Philoscia suarezi* on which Budde-Lund (1908) had based the new genus. The study of this material (BM No. 1921:10:18:2351–2358) did little clarify the problem as the specimens contained in the tube (i) come from two different collections (Voeltzkow and Alluaud) and two different localities (Nossi Bè and Diego-Suarez) (Ellis & Lincoln 1975: 92), (ii) are in poor condition and unable to withstand much handling, (iii) belong to two distinct species, one of which probably corresponds to the *Philoscia suarezi* described by Dollfus and the other to the *Philoscia suarezi* intended by Budde-Lund, and (iv) allow no conclusions on the genus (or genera?) to which they belong. Furthermore, the Danish author had established *Setaphora* on specimens—which he identified as *P. suarezi*—from other islands of the western Indian Ocean (Réunion, Comoro, Fundu) as well, but which probably belong to other species. It is indicative that the east African specimens identified by Budde-Lund (1910) as *S. suarezi* (NRS Is. 5826: Meru) not only do not correspond to the description of *P. suarezi* by Dollfus (1895a) but are not conspecific with the British Museum specimens. In fact, they belong to *Afrophiloscia uncinata* (Ferrara, 1974).

Until further information is available, the authors consider their diagnosis of *Setaphora* (Taiti & Ferrara 1980; Ferrara & Taiti in press) as valid. The four species assigned by Barnard to the genus belong to three distinct genera, none of which fits the proposed diagnosis of *Setaphora*. In fact, *Setaphora ocellata* belongs to the genus *Afrophiloscia* Taiti & Ferrara, 1980, *S. demarcata* is the type species of the new genus *Barnardoscia*, which also includes *B. maculata* sp. nov., while *S. mina* and *S. cingulata* belong to the genus *Natalscia* Verhoeff, 1942, together with the new species *N. thomsoni*, *N. rotundata*, and *N. appletoni*.

ZOOGEOGRAPHIC DISCUSSION

At present the list of South African Philosciidae—excluding *Chaetophiloscia elongata* and *Philoscia muscorum* for the above-mentioned reasons—is as follows:

<i>Aphiloscia vilis</i> (Budde-Lund, 1885)	Mozambique, Zimbabwe, Transvaal, Natal, Zululand, Cape Province, ?Ovamboland
<i>Benthanops fulva</i> Barnard, 1932	Cape Province

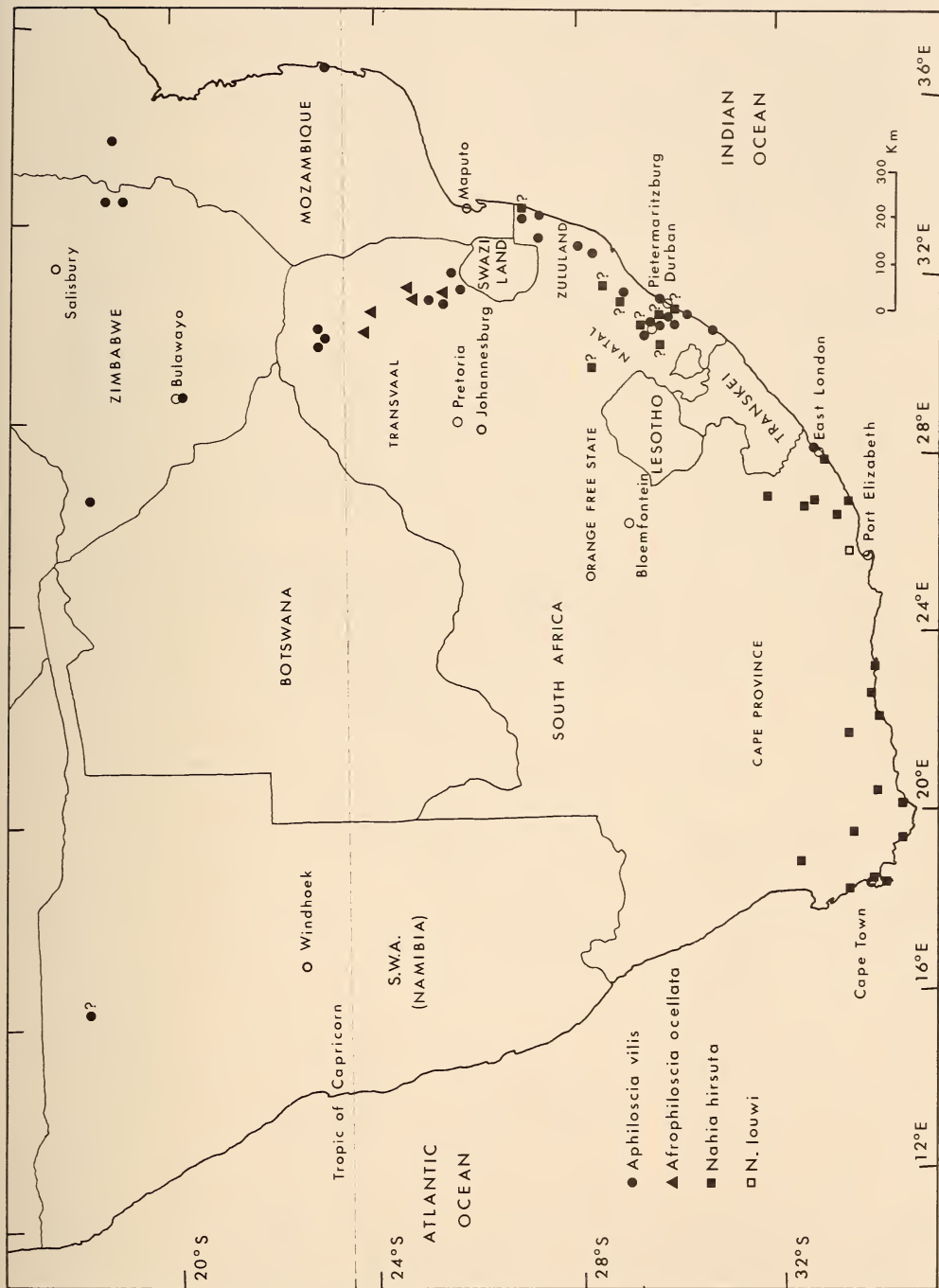


Fig. 23. Map of southern Africa showing distribution records of *Aphiloscia vilis*, *Afrophiloscia ocellata* and *Nahia* species. The question marks indicate doubtful or unconfirmed records.

<i>Afrophiloscia ocellata</i> Barnard, 1960)	Transvaal
<i>Nahia hirsuta</i> (Budde-Lund, 1906)	?Natal, ?Zululand, Cape Province
<i>Nahia louwi</i> sp. nov.	Cape Province
<i>Natalscia mina</i> (Budde-Lund, 1885)	Natal, ?Transkei, ?Cape Province
<i>Natalscia cingulata</i> (Barnard, 1932)	Natal, ?Transkei
<i>Natalscia thomsoni</i> sp. nov.	Natal
<i>Natalscia rotundata</i> sp. nov.	Natal
<i>Natalscia appletoni</i> sp. nov.	Zululand
<i>Natalscia</i> sp.	Transvaal
<i>Barnardoscia demarcata</i> (Barnard, 1932)	Natal
<i>Barnardoscia maculata</i> sp. nov.	Natal

The recorded distribution of each species is shown in Figures 23–25. The records of *Aphiloscia vilis* from Ovamboland, *Nahia hirsuta* from Natal and Zululand, and *Natalscia mina* from Cape Province are doubtful due to the uncertainties and errors in identification by the early authors. Because of the insufficient material the records of *Natalscia mina* and *N. cingulata* from Transkei need confirmation. Thus far, only *Aphiloscia vilis* has been found outside South Africa as well.

The distribution of South African philosciids is of particular interest: of the six known genera, four (*Benthanops*, *Nahia*, *Natalscia*, and *Barnardoscia*) are exclusive to this region. *Benthanops*, however, shows many affinities to the

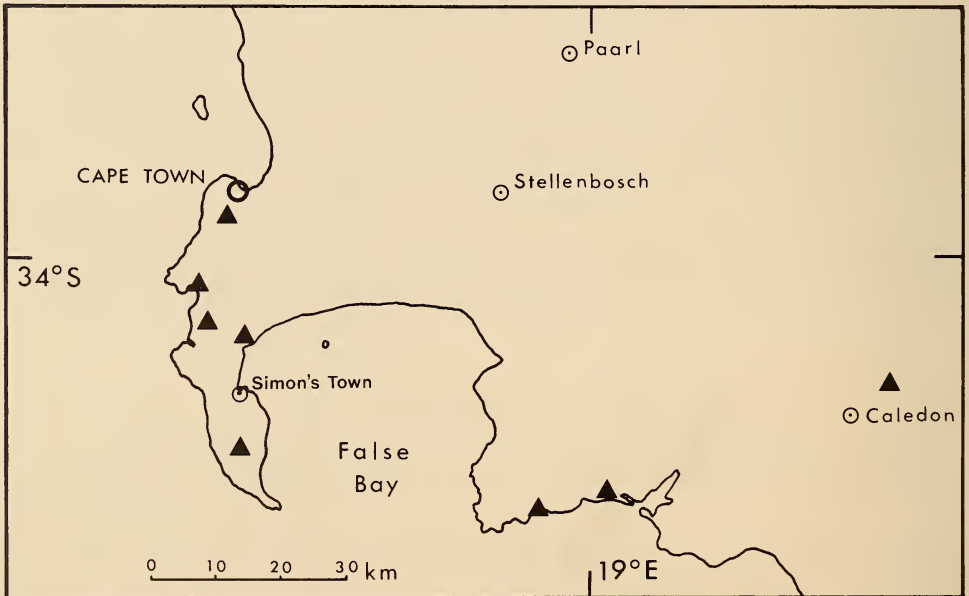


Fig. 24. Map of the south-western Cape Province showing distribution records of *Benthanops fulva*.

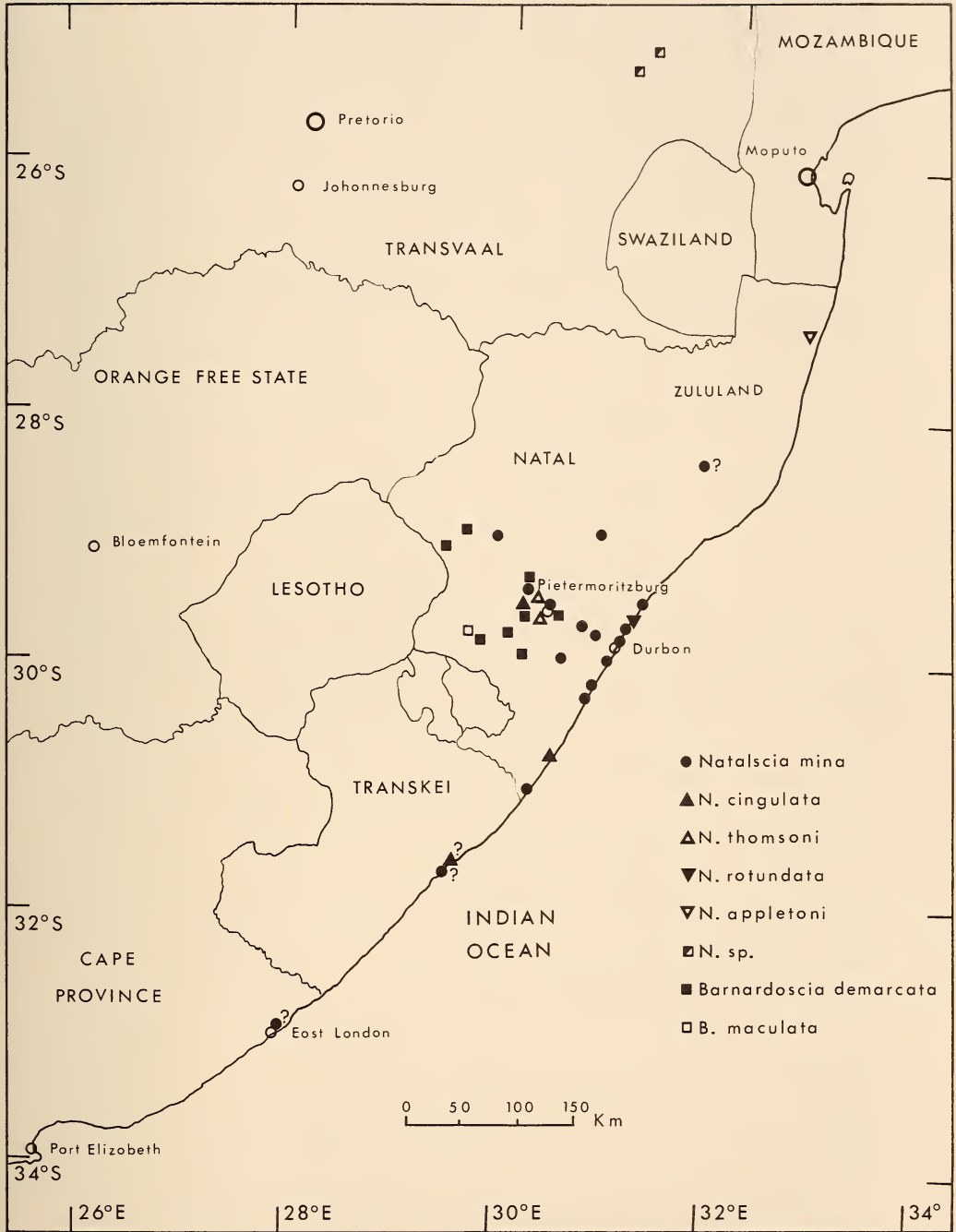


Fig. 25. Map of eastern South Africa showing distribution records of *Natalscia* and *Barnardoscia* species. The question marks indicate doubtful or unconfirmed records.

South American *Benthana* Budde-Lund, 1908, and allied genera and to the palearctic genus *Ctenoscia*, while *Nahia* belongs to the *Plymophiloscia* group (Vandel 1973a, 1973b) which occurs throughout the Orient and Australia. Of this group, only *Bilawrencia occidentalis* Ferrara & Taiti, in press, from Seychelles is known in Africa and surrounding islands. *Natalscia* and *Barnardoscia* are very close to each other and appear to be isolated from all the other African philosciids. *Aphiloscia* and *Afrophiloscia* are the only genera found in other African countries. The former is distributed throughout central and east Africa, Madagascar and other islands of the western Indian Ocean, while the latter occurs in Kenya and Tanzania. The fact that both genera are found only in the eastern part of South Africa is proof of the faunistic continuity of this area with east Africa.

TABLE 1
Synopsis of the Afrotropical genera of Philosciidae.

	gland pores	2 noduli laterales/ segment	4 noduli laterales on segment 7	4 noduli laterales/ segment	d/c maxilla	frontal line	supra-antennal line	pleon epimera	molar penicil of mandible	teeth of maxilla 1	penicil of maxilliped	respiratory areas	insertion of uropod exo-endopodite
<i>Aphiloscia</i>	+			+		+	+	p	s	c	-	+	≠
<i>Buddelundiscus</i>	?	?	?	?	?	+	+	p	?	c	-	+	≠
<i>Massaiscia</i>	+	?	?	?	?	+	+?	p	?	c	-	-	≠
<i>Komatia</i>	?	?	?	?	?	+	+	p	s	c	-?	?	=
<i>Perinetia</i>	?	?	?	?	?	+	+?	r	s	s(1)	?	-	?
<i>Pleopodoscia</i>	?	?	?	?	?	+	+	r	d	c	-	-	≠
<i>Didima</i> (3)	+			+		-	+	r	d	c(2)	-	-	=
<i>Renneloscia</i>	+	+			II, IV	-	+	r	s	c	+	-	=
<i>Secheloscia</i>	-	+			II, IV	-	+	r	s	s	+	-	=
<i>Afrophiloscia</i>	-	+			II, IV	-	+	r	s	c	-	-	=
<i>Setaphora</i>	+	+			IV	-	+	r	s	c	+	-	=
<i>Barnardoscia</i> (3)	+		+		I, IV	-	+	r	s	c	+	-	≠
<i>Natalscia</i> (3)	+	+			I, IV	-	+	r	s	c	-	-	≠
<i>Uluguroscia</i>	+	+			IV	-	+	r	s	c	-	-	=
<i>Bilawrencia</i>	-	+			-	-	+	r	d	c	+	-	≠
<i>Helenoscia</i> (3)	-	+			?	-	+	r	d	c	+	-	≠
<i>Nahia</i> (3)	+	+			-	-	+	r	s	c	-	-	≠
<i>Benthanops</i> (3) (4)	+		+		IV	-	+	r	d(5)	se	-	-	=
<i>Congophiloscia</i>	+	+			II, IV	-	-	r	d	c	+	+	≠
<i>Gabunoscia</i>	+	+			II, IV	-	-	r	d	c	-	-	≠
<i>Togoscia</i>	+	+			II, IV	-	-	r	d	c	+	-	=
<i>Vandelophiloscia</i>	-	+			(II), IV	-	-	r	d	s	-	-	≠
<i>Zebrascia</i>	-	+			II, IV	-	-	r	s	c	+	-	=
<i>Arcangeloscia</i>	+	+			IV	-	-	r	d	c	+	-	≠

+, present; -, absent; =, at the same level; ≠, spaced; c, cleft; d, dichotomized; p, produced; r, reduced; s, simple; se, serrate.

(1) 3 + 2 teeth; (2) 2 additional plumose teeth; (3) a dactylar seta is present; (4) a single large ommatidium; (5) a tuft of plumose setae each arising separately.

SYNOPSIS OF THE AFROTROPICAL GENERA OF PHILOSCIIDAE

In a previous paper on African philosciids (Taiti & Ferrara 1980), the diagnosis of four genera was either incomplete (*Benthanops*, *Nahia*) or non-existent (*Natalscia*, *Barnardoscia*) due to the lack of material, and thus it was thought useful to present a new synopsis of the known afrotropical genera (Table 1).

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